

Revision Notes:

The Elite performer – Sports Enhancing Drugs

Describe the physiological reasons why a performer may use anabolic steroids.

(3 marks)

- A. Aid/use/assimilation storage of protein
- B. Decrease in fat in the muscles
- C. Able to train for longer/higher intensity
- D. Faster recovery time/to train more frequently/ quicker repair of muscle tissues
- E. Increase muscle size/strength/mass

Sports Injuries

How may hyperbaric chambers aid injury rehabilitation? (3 marks)

- A. Reduces pressure at injured area/reduces swelling
- B. (Chamber) delivers oxygen at high pressure
- C. Approximately 2.5 more times than normal/100% pure oxygen
- D. Haemoglobin/red blood cells fully saturated with oxygen
- E. Excess oxygen dissolved in plasma
- F. Oxygen reaches parts of body that not normally saturated
- G. Increased white blood cell activity at injury site
- H. Increased blood supply/formation of new blood cells

How can a performer reduce the effects of delayed onset of muscle soreness

DOMS)? (3 marks)

- A. Active warm-up/Active warm-down/cool down/stretching
- B. Avoid eccentric contractions early in session
- C. Gradually increase intensity of workload
- D. Massage
- E. Ice baths

Explain how the use of an ice bath can help to reduce the 'delayed onset of muscle soreness' (DOMS). (4 marks)

- A. (Involves sitting in ice cold water for) between 5 – 20minutes
- B. Causes blood vessels to tighten/decreases metabolic activity/vasoconstriction
- C. Restricting blood flow to the area
- D. Reduces swelling/tissue breakdown/aids muscle repair
- E. After leaving the ice bath, area is flooded with new blood/vasodilation
- F. Fresh oxygen removes lactic acid (when out of the ice bath)
- G. Some studies suggest ice baths of limited value

Specialised training

Elite swimmers follow structured training programmes to develop exceptional levels of fitness.

Outline the relationship between 'VO₂ max' and 'lactate threshold'. (3 marks)

- A. VO₂ max – the maximum amount of oxygen utilised/equiv per unit of time/per minute
- B. Lactate threshold – the point at which lactic acid starts to accumulate in the blood/OBLA
- C. Lactate threshold is a percentage of VO₂max
- D. The higher the VO₂ max, the more the delay in lactic acid build-up/as VO₂max increases, so does lactate threshold
- E. Trained athletes can exercise for longer periods at the same/higher intensity compared to an untrained athlete/lactate threshold a much higher percentage of VO₂max

Explain how a swimmer would use 'periodisation' to prepare for competitions. (4 marks)

- A. Cycle based on World Championships/Olympics
- B. Possible to plan for double periodisation
- C. Preparation phase/pre season training – involves development of base levels of fitness/general conditioning/quantity rather than quality
- D. Competitive phase – refinement of skills/ maintenance of fitness levels/quality rather than quantity/ relevant examples of training modifications
- E. Tapering/peaking – preparation for specific competition/mainly skill focus
- F. Transition phase – active rest/out of season recovery period

- G. Macro-cycles – long term planning/yearly/two yearly cycle
- H. Meso-cycles – periods of two to eight weeks/months
- I. Micro-cycles – periods of a week/day/individual training sessions

(a) Describe the *structural and/or physiological* differences between elite marathon runners and non-elite joggers. (5 marks)

1. Increased VO₂ max
2. Increased myoglobin content/better able to store oxygen
3. More/bigger mitochondria
4. More oxidative enzymes
5. Increased stores of (useable) glycogen
6. Improved ability (more enzymes) to oxidise fat
7. Cardiac hypertrophy
8. Decreased resting heart rate/bradycardia
9. Increased stroke volume/ejection/fraction/maximum cardiac output
10. Increased blood volume/haemoglobin/red blood cell content
11. Increased capillary density/capillarisation
12. Increased hypertrophy/hyperplasia of slow-twitch muscle fibres
13. Increased a-vO₂ difference
14. Increase in maximal minute ventilation
15. Increased pulmonary diffusion capacity
16. Increased lactate accumulation/delayed or higher OBLA/lactate threshold
17. Reduced % body fat

(b) Altitude training is used by some marathon runners as part of their physiological preparation. Discuss whether *altitude training* is always beneficial to marathon runners. (5 marks)

5 marks for 5 of:

(sub-max 3)

1. Reduced pO₂ at altitude/less oxygen in air/available/lower O₂ concentration
2. Body produces erythropoietin/EPO
3. More red blood cells/haemoglobin
4. Greater oxygen transport capacity/carry more oxygen
5. Greater stamina/cardio-respiratory endurance/aerobic capacity/increased VO₂ max/aerobic respiration

(sub-max 3)

6. Reduced pO₂ – unable to train as hard as previously/at sea level
7. Altitude sickness/dehydration/too cold
8. Loss of fitness/quicker to exhaustion while at altitude/detraining effect
9. Therefore aerobic performance deteriorates
10. Requires several weeks/months to be effective
11. Psychological problems of lifestyle/isolated/expensive/interferes with normal training

Jan 08

2) Elite performers will use periodisation to organize their training programmes so that they are at their peak performance for a competition. What do you understand by the term *periodisation*? (3 marks)

1. Dividing training into periods/sections for specific purpose;
2. (Macrocycle) – long term plan/goal for single year/Olympics/World Championships;
3. (Mesocycle) – monthly/weeks/period of training on particular aspect;
4. (Microcycle) – weekly/days/individual training sessions to improve specific area;
5. If named all three cycles without explanation;
6. Training year divided into competitive phase/peaking/tapering/playing season;
7. Involving preparation phase – pre-season training;
8. Transition phase – active rest/out of season recovery. 3 marks

(a) (i) Explain why some athletes, such as marathon runners, may choose to spend time training at altitude. (3 marks)

1. Improved endurance/stamina/aerobic capacity/VO₂ max;
2. Reduced concentration/partial pressure of oxygen at altitude;
3. Compensation through increased red blood cells/haemoglobin;
4. Erythropoietin;
5. Enhanced oxygen carrying capacity (on return to sea level) 3 marks

(ii) What are the potential problems associated with *altitude training*? (3 marks)

1. Reduced pO₂ – training very hard;
2. Loss of fitness/detraining effect;
3. Increased lactate production/accumulation;
4. Altitude sickness/weeks to acclimatise;
5. Solution – live at altitude and train at sea level;
6. Other physiological e.g. blood viscosity/psychological/social/environmental factors. 3 marks

(b) Marathon runners may use *carbo-loading* as a means to improve performance. What do you understand by this term **and** why might marathon runners need to do this? (3 marks)

1. Need to store more than is normal;
2. Insufficient glycogen for duration of race;
3. Required as energy source;
4. Dietary manipulation – reduce intake of Carbohydrates then overcompensate;
5. May be combined with alterations to training programme/run to exhaustion/exhaust stores. 3 marks

Jan 07

3) In terms of the physical preparation of a team, what do you understand by the term *periodisation*? (3 marks)

1. Dividing training into periods/sections/for specific purpose/goals/targets;
Sub max 1 mark
2. Macrocycle – long term plan of single year/between Olympics/world Championships;
3. Mesocycle – monthly/weeks/period of training on particular aspect;
4. Microcycle – weekly/days/individual training sessions to improve specific area;
5. Just name cycles;

June 06

4)a) Long-distance runners may prepare for their activity by *glycogen-loading*. What are its advantages and disadvantages to long-distance runners? (4 marks)

1. Store more glycogen than normal/equiv;
 2. Aerobic energy source;
 3. Lack of glycogen to last race/delays hitting the wall/delaying fatigue;
 4. Manipulate diet;
 5. Reduce intake then over compensate;
- sub max 3 per section

Disadvantages

6. Affects metabolism/digestion; (do not credit indigestion/stomach problem)
 7. Water retention/heavy legs;
 8. Alterations to training programme/tapering/reduce training intensity
- sub max 3 per section
4 marks

(b) Long-distance runners may experience difficulties with their *temperature regulation* during performance. Why may an increase in body temperature cause a problem **and** how is it regulated during performance? (4 marks)

Problems

1. Exercise/muscle contraction generates heat;

2. High core temperature;
3. Increased blood viscosity/blood gets thicker;
4. Metabolic processes slowed down;
5. Cannot transfer metabolic heat generated by muscles quickly enough/unable to sweat efficiently
6. Denaturation of enzymes/enzymes don't function/work properly;
7. Loss of electrolytes/dehydration;

Regulation

8. Thermoregulatory centre/medulla/hypothalamus;
9. Heat loss through sweating/evaporation;
10. Vasodilation/opening of skin capillaries/blood closer to skin;
11. Heat loss through radiation;
12. Heat loss through conduction/convection;
13. Rehydration;
14. Training adaptations.

5) a)(i) What are the supposed benefits of *altitude training* ? (4 marks)

1. *Reduced pO₂ at altitude/less oxygen in air/available/lower O₂ concentration;*
2. *Body produces erythropoietin/EPO;*
3. *More red blood cells/haemoglobin;*
4. *Greater oxygen transport capacity/carry more oxygen;*
5. *Greater stamina/cardio-respiratory endurance/aerobic capacity;*
6. *E.g. marathon/endurance athletes. Max 4 marks*

(ii) Why is altitude training not always as effective as it should be? (3 marks)

- (ii) 1. *Reduced pO₂ – unable to train as hard as previously/at sea level;*
2. *Altitude sickness/quicker to exhaustion/dehydration;*
3. *Loss of fitness while at altitude;*
4. *Therefore aerobic performance deteriorates;*
5. *No benefit to anaerobic performance;*
6. *Requires several weeks/months to be effective; Max 3 marks*

The training that elite performers undertake may include *plyometrics* and/or *proprioceptive neuromuscular facilitation (PNF)* stretching.

(b) Explain the role of the *muscle spindle apparatus* in

(i) *plyometrics*, (4 marks)

1. *Initial eccentric/downward contraction;*
2. *Stimulates muscle spindle apparatus/detects stretch;*
3. *(Sensory) nerve impulses to CNS;*
4. *Role of gamma motor neurons;*
5. *Spindles are adapted muscle fibres;*
6. *Added to normal fibres/intrafusal fibre contraction;*
7. *(Concentric) contraction more powerful/greater force produced;*
8. *More overload/power/fitness gains. Max 4 marks*

(ii) *PNF stretching*. (3 marks)

- (ii) 1. *Golgi Tendon organs activated/detect stretch;*
2. *Muscles relax;*
3. *Inhibits stretch reflex/overrides/stops muscle spindles;*
4. *Designed to prevent overstretching/protective;*
5. *Allowing greater range of movement to be used. Max 3 marks*

Muscles

With reference to the Sliding Filament Hypothesis, explain the roles of tropomyosin and troponin during muscle contraction. (4 marks)

- A. Tropomyosin prevents myosin attaching to actin filaments
- B. Nerve impulse/electrical impulse/action potential
- C. Releases calcium ions (from sarcoplasmic reticulum)
- D. (Calcium ions) attach to troponin (on actin filaments)
- E. Causing shape of troponin to alter/moves out of the way
- F. Tropomyosin binds to actin/winds around/neutralises the troponin
- G. Exposes myosin binding site (on actin filament)
- H. Allows myosin to bind to actin/cross-bridges formed

June 12

The Sliding Filament Hypothesis suggests that muscular contraction occurs in the sarcomeres of muscle fibres.

Explain how actin and myosin filaments in the sarcomere bind together during muscular contraction. (4 marks)

- A. Filaments unable to bind due to tropomyosin
- B. Receipt of nerve impulse/action potential/electrical impulse/wave of depolarisation
- C. Sarcoplasmic reticulum (releases)
- D. Calcium (ions released)
- E. (Calcium) Attach to troponin (on actin filaments)
- F. Causes change of shape of troponin/moves tropomyosin
- G. Exposes myosin binding site (on actin filament)/ ATP
- H. Cross bridge formation
- I. Powerstroke occurs/Ratchet Mechanism/Reduce H zone/z lines closer together

All gymnastic events require controlled powerful movements.

How can a performer vary the strength of muscular contractions to ensure that a skill is completed correctly? (4 marks)

4 marks for 4 of:

- A. (Greater the force needed) larger motor units recruited
- B. More units recruited
- C. Need fast twitch fibres rather than slow twitch fibres
- D. Multiple unit summation/spatial summation
- E. All or none law/All or nothing law/or explanation
- F. Wave summation/frequency of impulse/innervations
- G. Motor unit unable to relax/increase the force
- H. Tetanus/titanic for powerful contraction
- I. Muscle spindles detect changes in muscle length/speed of contraction
- J. Send information to brain/CNS
- K. Compares information to long term memory to ensure correct force applied/past Experiences
- L. Spatial summation – rotating the frequency of the impulse to motor units to delay fatigue

a) Using **Figure 1**, which of the profiles, **A**, **B** or **C**, shows the proportions of muscle fibre types for elite sprinters? Justify your answer. (2 marks)

marks for 2 of:

- 1. A = elite sprinter
- 2. Uses fast-twitch fibres IIb/less slow-twitch fibres used

(b) Describe the characteristics of the main muscle fibre type used by elite sprinters. (4 marks)

4 marks for 4 of:

- 1. Fast contracting
- 2. High force production/more powerful

3. Low lactate/fatigue tolerance/lactate threshold
4. Larger/faster motor neurone
5. High sarcoplasmic reticulum development
6. More/thicker myosin/larger/bigger diameter
7. High PC stores/levels of creatine kinase
8. High glycogen stores
9. High glycolytic/anaerobic/ATPase enzyme capacity

(a) (i) It has been suggested that performers should be screened or tested to establish the proportions of different *muscle-fibre types* before deciding which activity to concentrate on.

Discuss whether such tests should be the only consideration when choosing an activity. (4 marks)

1. Fast-twitch for speed/anaerobic or strength/slow-twitch for stamina/aerobic;
2. Proportions inherited;
3. Unaffected by training;
4. But many other factors involved in activities e.g. skills/techniques;
5. e.g. Length of levers in sprinting;
6. e.g. VO2 max in stamina-based activities;
7. Two suitable examples of other factors such as fitness, ability, physique/frame size etc. 4 marks

What do you understand by the term *motor unit*? (2 marks)

- (a) (ii) 1. Motor neurone and muscle fibres;
 2. All fast-twitch or slow-twitch/ homogenous;
 3. All or none law. 2 marks

(iii) How are motor units involved in the process of *spatial summation*? (2 marks)

- (a) (iii) 1. (Spatial summation) – Increased strength/more force in muscles;
 2. Use bigger/larger motor units;
 3. More motor units;
 4. Fast-twitch units produce more force than slow-twitch units. 2 marks
 (ii) Contraction of different types of muscle fibres involves the use of motor units.

(a) What are the characteristics of the type of *muscle fibres* used to produce maximal contractions? (6 marks)

1. Fast-twitch (glycolytic) fibres/type 2b;
2. Fast motor neurone conduction velocity;
3. Large muscle fibre diameter;
4. More sarcoplasmic reticulum development;
5. Low mitochondrial density;
6. Low capillary density;
7. Low myoglobin content;
8. High PC stores;
9. High glycogen stores;
10. Low triglyceride stores;
11. High myosin ATPase / glycolytic enzyme activity;
12. Low oxidative enzyme activity;
13. Fast contraction / relaxation time;
14. High force production/more powerful;
15. Low fatigue resistance.

(Credit first type of muscle fibre named) 6 marks

(b) Explain how the *muscle spindle apparatus* may be used to adjust the strength of a muscle contraction. (3 marks)

1. Muscle spindles are (stretch) receptors/proprioceptors;
2. Force/resistance causes contraction or stretching of a muscle detected by muscle spindles;

3. Results in sensory impulses going to brain/spinal cord/CNS concerning state of contraction;
 4. Muscle pre-sets tension based on information held in memory;
 5. Gamma bias;
 6. Tension adjusted through feedback of information to brain;
 7. Gamma neurones activate spindle/intrafusal fibres;
 8. Recruit more/bigger motor units;
- 3 marks

9) The player in **Figure 4** is preparing to catch the ball. Explain the role of *muscle spindles* in the action of catching the ball. (3 marks)

- A. Changes to contraction/lengthening/shortening/stretch in muscle detected by spindles/intrafusal fibres;*
B. Sensory nerve impulses to brain/spinal cord/CNS;
C. Body awareness/kinesthesia/position of arms set;
D. Spindles pre-set tension in muscles/muscle loading;
E. Uses memory/experience; (E must be linked to D to credit)
F. Gamma bias (do not credit gamma neuron). 3 marks

(a) (i) Identify **five** structural **and/or** physiological differences between fast and slow-twitch muscle fibres. (5 marks)

1. Fast-twitch have – faster contractions/twitches/faster (myosin) ATPase;
 2. More PC;
 3. Lower lactate tolerance/fatigue easily;
 4. More glycogen;
 5. More anaerobic enzymes/greater capacity;
 6. Less mitochondria;
 7. Less myoglobin;
 8. More oxidative enzymes/lower oxidative capacity;
 9. More force/strength/powerful contractions;
 10. More sarcoplasmic reticulum;
 11. Larger motor neurone/(motor) unit/fibre diameter.
- (Accept reverse of slow twitch) Max 5 marks

(ii) Suggest **three** possible physiological causes of muscle fatigue. (3 marks)

1. Lack of PC;
2. Lactate/lactic acid build up/OBLA;
3. Increase acidity/lowering pH/increase H⁺ concentration;
4. Effect on enzymes/actin/PFK;
5. Lack of calcium ions;
6. Glycogen depletion;
7. Acetylcholine depletion;
8. Dehydration/electrolyte depletion;
9. Muscle wisdom/less impulses sent from brain.

Energy Systems, Fatigue and Recovery

June 13

Explain how energy is provided, allowing the athlete to complete the shot put. (3 marks)

- A. Stored ATP*
B. Alactic system/ATP-PC system/Phosphocreatine system/ATP-CP system
C. PC breakdown
D. To creatine and phosphate/C and P
E. Energy used/released to perform the contraction/re-synthesis for ATP

Athletes must have sufficient energy stores to compete and perform in a variety of weather conditions.

Identify the energy sources that a performer may use during competition. (3 marks)

- A. Carbohydrates/Glucose/Glycogen*
B. Protein/Lactate/Amino acids

- C. Fats/Fatty acids/Glycerol/Triglycerides
- D. Creatine/phosphocreatine

Explain how thermoregulation is achieved by the body during exercise. (4 marks)

- A. Thermoreceptors – detect temperature changes and send messages
- B. Thermoregulatory centre/medulla/hypothalamus – receives messages/controls temperature
- C. Vasodilation – opening of blood vessels/blood closer to skin
- D. Radiation – heat lost by infrared rays/no physical contact needed
- E. Conduction – heat lost from (skin) to object/air
- F. Convection – heat lost by movement of gases/air
- G. Evaporation – heat lost by liquid to vapour/sweating
- H. Heat retention – hairs raised/shivering/piloerection
- I. Vasoconstriction – closing of blood vessels/skin capillaries

Using your knowledge of energy systems, outline **and** explain the relationship between energy sources and intensity of exercise. (7 marks)

- A. At low level of exercise energy comes from a mixture of fats and carbohydrates;
- B. Broken down aerobically/using oxygen/aerobic system;
- C. Glycolysis/Anaerobic Glycolysis – glucose broken down/pyruvic acid/pyruvate formed
- D. Beta oxidation breaks down fats/tri-glycerides/free fatty acids
- E. Krebs Cycle – oxidation of acetyl-coenzyme-A/Citric acid production
- F. Electron transport/transfer chain – water formed/hydrogen ions/protons used
- G. At high levels of intensity carbohydrates are only energy source/as intensity increases, more carbohydrates used;
- H. At high intensity fat use limited by oxygen availability/no fats used anaerobically/lack of oxygen;
- I. Slower energy release from fats/quick release of energy from carbohydrates;
- J. (Carbohydrate break down) Lactic Acid System/Lactate anaerobic system
- K. No oxygen used/anaerobic
- L. Glycolysis/Anaerobic Glycolysis – glucose broken down/pyruvic acid/pyruvate formed/lactate/lactic acid formed

Explain the terms lactate sampling **and** respiratory exchange ratio. (4 marks)

- A. (Lactate sampling) – taking blood samples (to measure the level of lactic acid)
 - B. Ensures training is at the correct intensity/monitor improvements over time
 - C. Provides accurate/objective measure
 - D. Measures OBLA/lactate threshold/occurs at 4 mmols
- Sub max of 2 marks
- E. (Respiratory Exchange Ratio) – ratio of carbon dioxide released compared to oxygen used by the body
 - F. Estimates use of fats and carbohydrates used during exercise/ calculates energy expenditure
 - G. Tells if performer working aerobically/anaerobically/energy system used
 - H. RER close to 1 performer using carbohydrates/close to 0.7 using fats/respiratory quotient

Gymnastic events can last up to 90 seconds.

Explain how the majority of energy is provided for these events. (7 marks)

7 marks for 7 of:

- A. Anaerobic/without oxygen
- B. (during first few seconds) stored ATP splits/breaks down initially/ATP breaks down to ADP + P + energy
- C. ATP-PC/system/phosphocreatine system/alactic system
- D. $PC = C + P(i) + \text{energy}$ /creatine + phosphate/PC broken down;
- E. Energy used for ATP resynthesis/ $ADP + P + \text{energy} = ATP$ / $ADP + PC = ATP + C$;
- F. Lasts 5-10 seconds/limited supply
- G. Lactic acid system/Lactate anaerobic system
- H. Glycogen/glucose breakdown
- I. Glycolysis
- J. To pyruvate/pyruvic acid

K. Lactate/lactic acid formed

Outline the function and process of the fast component of the recovery process. (4 marks)

4 marks for 4 of:

- A. EPOC explanation – volume of oxygen consumed in recovery above the resting rate
- B. The alactacid/alactic (debt/component)
- C. Re-saturation of myoglobin/haemoglobin with oxygen
- D. Re-synthesise ATP/PC levels
- E. Uses 2-4 litres of oxygen
- F. Completed in 2-3 minutes
- G. 50% PC stores replenished within 30 seconds/75% within 60 seconds

Competitive swimmers will often compete in several events and suffer from fatigue due to limited recovery time.

Explain the possible causes of fatigue during a race. (3 marks)

- A. Build up of lactic acid /accumulation of hydrogen ions/OBLA
- B. Glycogen depletion/needed for glycolysis
- C. Dehydration/reduces blood flow/loss of electrolytes/increase body temperature
- D. Reduced levels of calcium
- E. Reduced levels of acetylcholine/slows nerve impulse and inhibits contraction
- F. Lack of PC stores

(b)What do you understand by the term *lactate threshold* and why should games players keep below it? (2 marks)

- 1. Lactate threshold – accumulation of lactate/lactic acid in blood/OBLA/4 mmols in blood
- 2. Too much lactate leads to fatigue/deteriorating performance
- 3. Because of high acidity/low pH/increased H⁺/inhibiting enzymes

(c) In terms of recovery, explain the relationship between lactate threshold and the functions of *Excess Post-exercise Oxygen Consumption (EPOC)*. (5 marks)

- 1. Lactate removed during EPOC
- 2. Slow/lactacid component
- 3. Oxygen used/needed for aerobic energy/ATP production formation
- 4. Lactate mainly converted back into pyruvate
- 5. Mitochondria/Kreb's cycle/to CO₂ and H₂O
- 6. In inactive muscles/other organs (liver)
- 7. Some lactate converted to glucose/glycogen/protein
- 8. Cori cycle
- 9. Some excreted in urine and sweat

Using **Figure 2**, explain how dietary modification could be used to improve the performance of a long-distance swimmer. (4 marks)

4 marks for 4 of:

(sub-max 2)

- 1. High carbohydrate diet increases glycogen level
- 2. Above normal
- 3. Needs to be taken 1 day prior to swim because levels fall otherwise

(sub-max 3)

- 4. Super compensation/overcompensation/glycogen loading/carbo-loading
- 5. Glycogen = energy source/provides ATP
- 6. Aerobic/using oxygen
- 7. Extra glycogen stores for high performance to last longer

(b) What are the advantages for a long-distance swimmer of following a high fat diet? (4 marks)

(b) 4 marks for 4 of:

- 1. Fat available as energy source/provide ATP
- 2. Fat break down is aerobic/requires oxygen

3. Used during low intensity exercise/available long duration exercise
4. Insufficient glycogen to last duration of event
5. No fatiguing by-products
6. Fat gives buoyancy
7. Fat as insulator

(a) How is the majority of energy required by games players produced? (4 marks)

1. Aerobic/with oxygen;
2. Glucose/glycogen/carbohydrate/broken down to pyruvate;
3. Glycolysis;
4. Mitochondria/Krebs cycle;
5. Electron transport chain;
6. ATP production. 4 marks

(b) During a game, performers may suffer fatigue because they have a low lactate threshold (OBLA).

(c) What do you understand by the term *lactate threshold* and how is this related to *VO2 max*? (3 marks)

1. Levels at which lactate/lactic acid accumulates in blood;
2. Exercise has become anaerobic/without oxygen;
3. Lactate threshold is some proportion/percentage of *VO2 max*;
4. Proportion/percentage of lactate threshold increases as fitness increases/delayed lactate threshold/OBLA. 3 marks

(a) Explain how the **majority** of energy required by an athlete in a 1500metre race is produced. (4 marks)

- (b) 1. ATP breakdown(resynthesis, regenerated);
2. From glucose/glycogen/carbohydrate;
 3. From fat/triglycerides/fatty acids/glycerol;
 4. beta oxidation;
 5. Aerobic/using oxygen
 6. (Anaerobic) glycolysis;
 7. Pyruvate;
 8. Mitochondria/Kreb's cycle;
 9. Lactate formation; 4 marks

(b) Following exercise, individual members of a team may experience *Excess Post-exercise Oxygen Consumption* (EPOC).

(i) What are the functions of the *fast component* of EPOC? (2 marks)

- (i) What are the functions of the *fast component* of EPOC.
1. Restoration of ATP / PC levels;
 2. Resaturation of myoglobin/haemoglobin with oxygen; 2 marks

(ii) Explain how the functions of the *slow component* are achieved. (3 marks)

- (ii) 1. Removal of lactate/lactic acid;
2. By oxidation/aerobic energy production;
 3. In other organs (liver)/muscles/Cori cycle;
 4. Conversion to pyruvate- used as energy source;
 5. To water and carbon dioxide;
 6. Conversion to glycogen / glucose;
 7. Some converted to protein / some excreted in sweat and / or urine;
 8. Oxygen used to maintain high work rates of heart / breathing muscles;
 9. Extra oxygen used as temperature remains high;
- 3 marks

(i) What do you understand by the term *V' O2 max*? (2 marks)

(i) A. Maximum oxygen used/vol/amount/uptake/consumed/taken up;
B. Per minute/unit time;
Do not credit over a long period of time 2 marks

(ii) List **five structural and/or physiological** reasons why the $\dot{V}O_2$ max of an elite athlete may be greater than that of a fun runner. (5 marks)

A. Increased maximum cardiac output;
B. Increased stroke volume/ejection fraction /cardiac hypertrophy;
(not bigger heart/muscle)
C. Greater heart rate range/RHR \rightarrow MHR;
D. Less oxygen being used for heart muscle/more available to muscles;
E. Increased a-vO₂ diff;
F. Increased blood volume and haemoglobin/red blood cells/blood count;
G. Increased stores of glycogen and triglycerides;
H. Increased myoglobin (content of muscle);
I. Increased capillarisation (of muscle);
J. Increased (number and size) of mitochondria;
K. Increased concentrations of oxidative enzymes;
L. Increased lactate tolerance/clearance/Increased %VO₂ max/OBLA/anaerobic threshold;
M. Reduced body fat
N Slow twitch hypertrophy Max of 5 marks

Elite swimmers can complete a 200metres free-style race in just under 2 minutes.

(a) (i) Describe how the **majority** of energy will be produced for this type of race. (4 marks)

A. Anaerobic/without O₂;
B. Glycolysis/lactic acid/lactacid;
C. ATP produced;
D. Glucose/glycogen/carbohydrate to pyruvate/pyruvic acid;
E. Pyruvate to lactate/lactic acid Max of 4 marks

(ii) Explain the main cause of *muscle fatigue* during this type of race. (2 marks)

(ii) A. Lactate/lactic acid;
B. Increased acidity/decreased pH;
C. Inhibition of enzyme action/contractile process/inhibits muscle action/ contraction; Max of 2 marks

(iii) Describe how the main cause of this muscle fatigue is removed from the body after the race. (4 marks)

(iii) A. EPOC/Excess Post Exercise Oxygen Consumption
B. Slow component/lactacid;
C. Oxygen used/needed for aerobic energy;
D. Lactate mainly converted back into pyruvate/CO₂ and water;
E. In inactive muscles/ other organs (liver);
F. Some lactate converted to glucose/glycogen/protein;
G. Cori cycle;
H. Excreted in urine and sweat Max of 4 marks

(a) What would be the major *energy sources* used by a triathlete? (3 marks)

1. Fats;
2. Fatty acids;
3. Glycerol;
4. Triglycerides. Sub max 2 marks
5. Carbohydrates;
6. Glycogen;
7. Glucose;
8. Protein/lactate. Sub max 2 marks
3 marks

(b) Briefly explain how these energy sources are used for *regeneration* of ATP. (5 marks)

- (b) 1. Carbohydrates/glycogen/glucose broken down into pyruvate;
 2. Anaerobic/glycolysis;
 3. Some ATP produced;
 4. Fats/triglycerides/fatty acids/glycerol broken down into variety of compounds;
 5. Beta oxidation;
 6. Into mitochondria;
 7. Krebs cycle;
 8. Electron transport chain;
 9. Oxidation/aerobic;
 10. Large quantities of ATP produced. 5 marks

(a) (i) What is meant by the term *VO₂ max*? (2 marks)

1. Maximum oxygen uptake/consumption/used;
2. Per minute/unit of time. 2 marks

(ii) Suggest **five** structural and/or physiological causes of the difference in *VO₂ max* between a trained and an untrained performer. (5 marks)

1. Increased myoglobin content;
2. More/bigger mitochondria;
3. More oxidative enzymes;
4. Increase in stored glycogen;
5. Improved oxidation of fat;
6. Cardiac hypertrophy/athletes heart/ (do not credit bigger/stronger);
7. Increased stroke volume/more blood per beat;
8. Increased maximum cardiac output;
9. Increased blood volume/haemoglobin content/red blood cells/EPO;
10. Increased capillary density/capillarisation;
11. Increased hypertrophy of slow-twitch muscle fibres;
12. Increased a-*VO₂* differences;
13. Increase in a maximal minute ventilation;
14. Increased pulmonary diffusion capacity;
15. Increased lactate accumulation/delayed OBLA;
16. Reduced EPOC;
17. Reduced percentage of body fat

What do you understand by the term lactate threshold **and** how would the majority of the athlete's energy be supplied during the periods of activity? (4 marks)

1. *LT – lactate/lactic acid levels increase in blood/OBLA;*
Sub max 3 marks
2. *Lactic anaerobic pathway/alactic system/anaerobic;*
3. *Carbohydrates/glycogen/glucose broken down to pyruvate;*
4. *Glycolysis;*
5. *ATP produced;*
6. *Conversion/produces lactate/lactic acid*
7. *LDH – lactate dehydrogenase*
(accept annotated diagrams & equations) (only credit point 6 only if linked to 3&4) 4 marks

(d) Using the information in **Table 1**, suggest reasons why the time taken to complete the final run was much slower than the time taken to complete the first run. (3 marks)

1. *Insufficient/not enough time for recovery;*
2. *Lactate removed during recovery time;*
3. *EPOC;*
4. *Uses aerobic system;*
5. *Lactate builds up/increased H⁺/decreased pH;*
6. *Which causes muscle fatigue;*
7. *Acidity inhibits muscle contraction/enzyme activity;*

8. ATP produced too slowly.

3 marks

(a) Name the **main** energy system being used in the final sprint to the finishing line **and** explain how this system provides energy for the working muscles. (4 marks)

1. ATP-PC/ system/phosphocreatine system/lactic system; Sub max 1 mark

2. PC stored in muscles; Sub max 3 marks

3. $PC = C + P(i) + \text{energy/creatine} + \text{phosphate}$;

4. Energy used for ATP resynthesis;

5. $ADP + P + \text{energy} = ATP/ADP + PC = ATP + C$;

6. ATP broken down into $ADP + P(i) + \text{energy}$;

7. Anaerobic/no O_2 ;

8. Glycolysis;

9. Lactate/lactate acid; Max 4 marks

(b) At the end of the race, the cyclist will be out of breath and will continue to breathe heavily even though they have come to a complete rest. Explain why this breathlessness occurs. (4 marks)

(b) 1. EPOC/Excess Post Oxygen Consumption; (Do not credit O_2 debt/deficit);

2. Aerobic energy needed;

3. Demand/need for/require oxygen/ O_2 ;

4. Restoration of PC/ATP/Phosphogens;

5. Resaturation of myoglobin with oxygen; (Do not credit haemoglobin)

6. Lactate/lactic acid breakdown/removal;

7. High temperature/high metabolic rate;

8. Energy for high heart rate/breathing rate; Max 4 marks

(a) During a five-minute skating programme, what will be the **three** main energy sources used? (3 marks)

1. Fats/ fatty acids/glycerol;

2. Triglycerides;

3. Lactate/protein/amino acids/lactate acid/creatine;

Sub max 2 marks

4. Glycogen;

5. Glucose/sugar;

6. Carbohydrate. 3 marks

Application of force

Heptathletes are required to complete the 200metre sprint.

A 200metre runner must exert a large force in a short period of time to generate an impulse.

Sketch and label a graph to show the impulse generated during the acceleration phase of a 200metre race. (3 marks)

A. X Axis – (time)/milliseconds/seconds

B. Y Axis – (force)/Newton's

C. Shape of graph – negative and positive components of force shown with negative first

D. Positive impulse clearly larger than negative impulse

E. Positive and negative (force) labelled

One event in the heptathlon is the shot put, as shown in Figure 2. This involves one powerful, explosive movement.

Name three factors that affect the distance the shot travels. (1 mark)

A. Height, Speed and Angle of release

The final stage of an endurance race often involves a sprint finish.

Using Newton's Second Law of Motion, explain how an athlete is able to accelerate towards the finish line. (3 marks)

A. Mass of runner is constant

- B. Force = Mass x Acceleration
- C. Greater the force exerted on the floor, the greater the acceleration/ momentum/proportional
- D. Force governs direction
- E. Force provided by muscular contraction
- F. Ground reaction force

During the race, a swimmer has to dive off the starting blocks as quickly as possible. Using 'Newton's First **and** Second Laws of Motion', explain how the swimmer dives off the starting blocks. (4 marks)

A. Force is applied by the muscles

Newton's First Law of Motion/Law of inertia

- B. Performer will remain on the blocks unless a force is applied
- C. Performer continues to move forwards with constant velocity until another force is applied
- D. Water slows the swimmer

Newton's Second Law of Motion/Law of Acceleration

- E. Mass of swimmer is constant
- F. Greater the force exerted on the blocks, the greater the acceleration/momentum
- G. Force governs direction

Elite golfers use their clubs to overcome the forces acting on the golf ball so that it travels long distances.

(a) Describe how the impact of the golf club, gravity and air resistance affect the *velocity and acceleration* of a golf ball. (4 marks)

Golf club

- 1. Applies force
- 2. Gives acceleration/changes momentum/velocity

Gravity

- 3. Only affects vertical component of flight
- 4. Reduces/negative effect on velocity/decelerates

Air resistance

- 5. Negligible
- 6. Affects horizontal components
- 7. Reduces/negative effect on velocity/decelerates

(b) The flight of a golf ball is said to be parabolic. Explain the term *parabolic* **and** the main factors that limit the distance that a golf ball will travel in flight. (4 marks)

- 1. Left and right sides match/mirror each other/inverted U shape/symmetrical (if accompanied by diagram)
- 2. Height of release – higher height above landing more distance
- 3. Angle of release – closer to 45° the better/affects height and distance
- 4. Speed of release – more force/speed gives more distance
- 5. Design of golf ball/dimples

Maximising effort during performance is largely concerned with the correct application of forces.

(c) (i) What *forces* act on a player when they are running during a game? (3 marks)

- 1. Gravity;
 - 2. Friction/Air resistance;
 - 3. Action force/muscular forces/reaction forces/ground reaction force/GRF.
- 3 marks

(ii) During the game, a performer kicks a ball. Describe the effects of forces on the flight of the ball. (4 marks)

1. Muscular forces cause change in motion;
2. Gravity limits height of flight/pulls it back down;
3. (Gravity) reduces vertical component;
4. Air resistance/friction affects distance of flight;
5. (Air resistance) reduces horizontal component;
6. Can be negligible – short duration/short passing;
7. Can be large – long flight/passing. 4 marks

(a) Explain, using the idea of *vectors*, how these same muscle groups can produce both maximal horizontal motion and maximal vertical motion. (5 marks)

- (a) 1. *Vectors have magnitude/size;*
 2. *Vectors have direction;*
 3. *Point of application;*
 4. *Line of application; sub max 3*
 5. *Force applied to ground by muscles contracting*
 6. *Equal and opposite reaction force moves performer/GRF producing the movement;*
 7. *Vertical and horizontal components to vectors;*
 8. *Sprinter requires large horizontal component/high jumper requires large vertical component;*
 sub max 3 (accept annotated diagrams) 5 marks

(b) The acceleration that a performer achieves when sprinting or high jumping is related to impulse. What do you understand by the term *impulse*, **and** how does the athlete use impulse during their sprint or take-off? (3 marks)

- (b) 1. *Force x time/ Ft ;*
 2. *Equates to change in momentum/ $mv - mu$; sub max 2*
 3. *Constant mass;*
 4. *Impulse has direction;*
 5. *Single footfall;*
 6. *Positive impulse for acceleration at take off;*
 7. *Negative impulse when foot lands/breaking action;*
 8. *Net impulse positive equals acceleration;*
 9. *Graph annotated; 3 marks*

(a) Use *Newton's Three Laws of Motion* to explain how a tennis player moves towards the ball in preparation to play a stroke. (5 marks)

4 marks for 4 of:

- A. *First Law – reluctance to change state of motion/constant motion/ uniform motion/velocity;*
 B. *Force required to change state of motion/overcome inertia of player;*
 C. *Muscle contractions; (Sub max 2 marks)*
 D. *Second Law – magnitude/size of force governs change in momentum;*
 E. *Mass remains constant;*
 F. *Force governs magnitude of acceleration given to player;*
 G. *And direction; (Sub max 2 marks)*
 H. *Third Law – equal and opposite reaction force;*
 I. *Force applied to ground/ moves performer;*
 J. *Ground Reaction Force. (Sub max 2 marks)*

(b) Explain, in terms of the player moving towards the ball, the difference between *velocity* **and** *acceleration*. (3 marks)

- A. *Velocity = rate of change of displacement/displacement ÷ time;*
 (Not speed, not distance)
 B. *How fast/quickly player moves towards ball;*
 C. *Acceleration (not speed) = rate of change of velocity/change in velocity ÷ time (taken to change)/ $[V_f - V_i] \div \text{time}/a = !v \div t$;*
 D. *Push off ground to accelerate (not speed)/change velocity;*
 E. *(Both) have direction/are vectors. 3 marks*

(a) Name the forces acting on the ball while it is in the air **and** explain how these forces affect the ball's flight path. (4 marks)

- (a) A. Gravity and friction/air resistance;
- B. Ball's motion has vertical and horizontal components;
- C. Gravity decreases vertical component/acts downwards/affects height;
- D. From positive to negative;
- E. Friction/air resistance affects horizontal component/distance/speed/slows;
- F. Negligible/doesn't change/stays the same. Max of 4 marks

(b) Use Newton's three laws of motion to explain how a performer can move towards the ball in one of these games. (4 marks)

- 1. (First Law) force required to change state of motion (of performance);
- 2. (Second Law) size of force governs change of momentum; (do not credit $F=MA$)
- 3. Mass remains constant;
- 4. Force governs the magnitude of the acceleration given to the ball;
- 5. And direction;
- 6. (Third Law) equal and opposite (ground) reaction force;
- 7. Performer applies force to ball through muscle contractions. 4 marks

(c) In hockey, golf and rugby, the performer may hit or kick the ball into the air, where it becomes a *projectile*. Explain how the various forces involved act to affect a projectile **during** its flight. (3 marks)

- (c) 1. Parabolic flightpath/trajectory/parabola;
 - 2. Gravity reduces height achieved/brings projectile back to earth;
 - 3. Acts on the vertical component;
 - 4. Air resistance has no negligible effects;
 - 5. Horizontal components of most sports projectiles;
 - 6. Some projectiles affected by air resistance/shape – golf ball dimples 3 marks
- (Do not credit wind)

(b) Using **Figure 2**, explain the mechanical principles that allow spinning ice-skaters to adjust their rate of spin. (6 marks)

- (b) 1. Ice may be regarded as a friction free surface/friction is negligible;
 - 2. During spins angular momentum remains constant;
 - 3. Angular momentum is the quantity of rotation;
 - 4. Angular momentum = angular velocity x moment of inertia;
 - 5. Angular velocity = rate of spin/how fast skater spins;
 - 6. Moment of inertia = distribution/spread of mass around axis;
 - 7. Changing/reducing moment of inertia affects/increases angular velocity;
 - 8. Skater brings arms into body allowing rate of spin to increase.
- (Accept annotated diagrams/graphs) 6 marks

PAST PAPER QUESTIONS

STRESS AND ANXIETY

Using appropriate psychological theories, explain why performers may have different levels of optimal arousal **and** outline various somatic stress management techniques that can be used to control anxiety levels. (14 marks)

Arousal Theories

A. Drive Theory

- B. As arousal increases so does likelihood of dominant response/habit
- C. Experienced players perform better with higher levels of arousal/
the more experienced players in a team require higher levels of arousal
- D. Novice players perform better with lower levels of arousal

E. Inverted U Theory

- F. As arousal increases so does performance but only to certain level

- G. Optimal arousal occurs at moderate levels
- H. (Personality of performer) – extroverts higher levels of arousal/ introverts lower levels of arousal
- I. (Nature of the Task) – complex or fine skills lower need lower levels of arousal/simple or gross skills need higher levels of arousal
- J. (Skill of performer) – experienced higher levels of arousal/novices lower levels of arousal
- K. **Zone of Optimal Functioning**
- L. Some performers have a wider range of optimal arousal levels/different band widths of optimal arousal

Stress management techniques

- M. **Biofeedback**
- N. Measuring physiological responses
- O. eg heart rate/breathing rate/sweat production/skin temperature/ muscle tension/blood pressure/galvanic skin response
- P. Learn to recognise and control anxiety responses
- Q. **Centring/Breathing control**
- R. Deep breathing/diaphragmatic breathing
- S. Breath in through nose – expand abdomen fully – breath out through mouth
- T. May involve repeating key words/mantra
- U. **Muscle relaxation/Progressive Muscle Relaxation**
- V. Often combined with effective breathing control
- W. Focus on specific muscle groups/working inwards from the periphery
- X. Contract muscles – hold – relax

What are the disadvantages of using observation as a method to assess anxiety?
(3 marks)

3 marks for 3 of:

- A. Subjective/not objective
- B. Reliant on skill of the observer
- C. Time consuming/expensive/needs to be completed several times
- D. Observer needs to know normal behaviour patterns of performer for comparison
- E. May need several observers (at the same time)
- F. If performer knows observation is occurring they may behave differently/become more anxious/increased state anxiety/experience evaluation apprehension/social inhibition

Identify **and** explain the different types of anxiety that may affect a performer.
(3 marks)

3 marks for 3 of;

- A. Trait anxiety/A-Trait – performer generally perceives situations as threatening
- B. State anxiety/A-State – level of anxiety at a specific time/particular situation
- C. Competitive Trait Anxiety – performer generally perceives competitive situations as threatening
- D. Competitive State Anxiety - level of anxiety during competitive situations
- E. Cognitive anxiety – psychological responses/thoughts and worries of performer/doubts in their ability to complete the task
- F. Somatic anxiety – physiological responses of performer/increased heart rate/sweating or eq.

12) Name a cognitive stress management technique and describe how a player could use this technique to control their arousal level (3)

- 1) *Thought stopping*
- 2) *Use of cues / actions / words*
- 3) *Re-direct to positive thoughts*
- 4) *Self Talk / positive self talk*
- 5) *Mental Rehearsal*
- 6) *Attentional Control*

What are the possible effects on performance when a performer enters a major competition with a high level of anxiety? Discuss the strategies and techniques the performer may use to manage anxiety in the build up to the competition. (14 marks)

Possible effects of anxiety on performance, addressing points such as:

- *Cognitive anxiety, psychological side, e.g. nerves, worry, apprehension*
- *Has a negative linear relationship with performance*
- *Increased levels of cognitive anxiety = decrease in overall performance*
- *Somatic anxiety in the physiological aspect e.g. sweaty palm, high HR*
- *Has an inverted U theory relationship, optimal level for best performance*

Strategies and techniques to manage anxiety, addressing points such as:

- *Progressive muscle relaxation*
- *Breathing techniques*
- *Thought stopping*
- *Visualisation/imagery*
- *Mental rehearsal*
- *Centering*
- *Attention focussing/Cue utilisation*
- *Use of goal-setting*
- *Using SMART/SMARTER principles*
- *Positive self-talk*
- *Hypnosis*

Golfers have to remain calm when putting but may suffer from *anxiety*. Explain the different forms of anxiety that may affect performers in similar demanding situations. (4 marks)

1. *Trait anxiety – enduring/innate personality trait/ a pre disposition/all situations perceived as threatening*
2. *State anxiety – temporary emotional response to a situation/situation specific*
3. *Cognitive (state anxiety) – psychological/feelings of nervousness, apprehension, negative thoughts or worry*
4. *Somatic (state anxiety) – physiological/signs of arousal – sweaty palms, high heart rate, etc*

(a) (i) Distinguish between *cognitive anxiety* and *somatic anxiety*. (2 marks)

1. *Cognitive – psychological thoughts/thinking/worries/fears/nerves;*
2. *Somatic – physiological responses/increased heart rate/sweating/muscle tension/nausea.*

(ii) How do cognitive and somatic anxieties vary in the periods leading up to **and** during competition? (3 marks)

1. *Cognitive higher in days before competition;*
2. *Somatic rises quickly a few hours before the event;*
3. *Cognitive fluctuates/changes/varies/goes up and down/during the event due to success or failure;*
4. *Somatic decreases during the competition.*

(b) Name and describe **one** technique for managing the effects of stress. (3 marks)

1. Thought-stopping;
2. Cognitive;
3. Use of simple mental or physical action (e.g. clenching fist, counting slowly);
4. Switches attention into a calm/controlled mental state to reduce anxiety;
5. Depends on prior learning/conditioning of the response of the calm state to the stimulus of 'action';
6. Self-talk;
7. Cognitive;
8. Develop positive thoughts to remove negative ones;
9. Used as a means of breaking 'bad habits' e.g. 'stop'/'no' or to remind ourselves of key aspects of technique e.g. jump/drive/focus/concentrate on appropriate cues/signals;
10. Depends on learning to concentrate on own thoughts;
11. Imagery/visualisation;
12. Cognitive;
13. Lock in on 'perfect performance';
14. Reduces anxiety by diverting attention away;
15. Depends on previous learning of visualised sequences of perfect performance;
16. Mediation;
17. Cognitive;
18. Use of controlled breathing to induce a 'state' of mental calmness;
19. Switches attention from anxiety-producing state to reduce anxiety;
20. Depends on prior learning to 'transcend' from anxious state to calm state through 'mantra'/word/sound;
21. Progressive Muscular Relaxation;
22. Somatic;
23. Use of alternate tension and relaxation of body muscles (coupled with breathing rhythm);
24. Progressively reduces tension of whole body and associated anxiety;
25. Depends on learned ability to systematically concentrate on tension reduction in muscles, starting at periphery and working towards the centre;
26. Autogenic training;
27. Cognitive;
28. Involves directing thoughts away from stress-causing situation;
29. To other calming influences;
30. Depends on ability to learn to re-direct thoughts;
31. Biofeedback – somatic;
32. Somatic;
33. Use of measuring device (pulseometer/electrical conductivity) to reduce level of chosen variable;
34. Reduces anxiety associated with physiological variable;
35. Depends on prior learning of ability to use monitoring device as a means of diverting attention away from anxiety.

(i) What do you understand by the terms *cognitive state anxiety* **and** *somatic state anxiety*? (2 marks)

a) *Cognitive state anxiety . psychological/feelings of nervousness/ apprehension/ and worry (not mental/mind thoughts);*

b) *Somatic state anxiety . physiological/awareness of arousal . sweaty palms/ high heart rate/butterflies/nausea/muscle tension etc (Do not credit not physical) 2 marks*

(ii) Describe how cognitive state anxiety and somatic state anxiety may vary prior to **and** during the race. (3 marks)

- A. Cognitive state anxiety increases slowly/gradually in the days prior to competition;
 - B. Changes during competition/fluctuates, as the likelihood of success or failure changes;
 - C. Somatic state anxiety tends to be low well before competition, but increases rapidly as event approaches;
 - D. Generally decreases during competition.
- Accept annotated diagrams 3 marks

(c) Name and explain the different forms of *anxiety* that a performer may experience. (4 marks)

- 1. Trait anxiety . enduring/innate personality trait/a predisposition/all situations perceived as threatening;
 - 2. State anxiety . temporary emotional response to a situation/situation specific;
 - 3. Cognitive (state anxiety) . psychological/feelings of nervousness, apprehension and worry; (Do not credit mind/head)
 - 4. Somatic (state anxiety) . physiological/awareness of arousal . sweaty palms, high heart rate, etc.. (Do not credit body/physical)
- (Must explain to credit) Max 4 marks

(d) Various tests have been designed for measuring anxiety in sport. Name **one** of these tests, state how it is administered **and** what aspect of anxiety it measures. (3 marks)

- 1. SCAT/Trait Anxiety Inventory /Competitive Sports Anxiety Questionnaire/SAS;
 - 2. Questionnaire/questions;
 - 3. Trait anxiety/equiv.
- or**
- 4. CSAI-2/CSAI/AD-ACL/SAI;
 - 5. Questionnaire/questions;
 - 6. State anxiety/cognitive and/or somatic (state) anxiety/equiv Max 3 marks

AROUSAL THEORY

11) Using the catastrophe theory, describe how over arousal may affect a players performance (4)

- 1) Performers need to optimum levels of arousal to perform their best
- 2) Over arousal can cause a decrease in performance
- 3) Performer can recover
- 4) Caused by cognitive anxiety
- 5) Performer can continue to decrease and not recover
- 6) Caused by somatic and cognitive anxiety
- 7) Recovery time can vary depending on the performer and duration of the event

Apart from drive theory, name **two** other theories of arousal. (3 marks)

- 1. Inverted 'U' theory
- 2. Catastrophe theory
- 3. Baron's distraction-conflict theory

Using **drive theory**, explain why performers such as golfers might hit some bad shots due to their levels of *arousal*. (3 marks)

- 1. Increased drive/arousal means performer tries harder/linear relationship to performance/ $p = d \times h$
- 2. Elicits dominant response/habit
- 3. Beginner/early/cognitive/associative stage of learning - negative effects because of low skill levels

4. Dominant response not fully developed/not correct
5. Impairment effect more likely because complex task
6. Negative effect enhanced if thought to be judged/evaluation apprehension

(a) The presence of spectators may lead to an increase in arousal. What do you understand by the term *arousal*? (2 marks)

1. State/level of activation/excitement/alertness/anticipation
2. Somatic = physiological eg increased heart rate/sweating etc
3. Cognitive = psychological eg loss of concentration/attentional narrowing etc

(b) Explain the effects of arousal on a performer in terms of *catastrophe theory*. (3 marks)

1. Increasing arousal leads to increased performance up to optimal level
2. Further increase in arousal leads to dramatic decline in performance
3. From which performer may be able to use calming methods and refocus to return arousal levels to optimal
4. Or further arousal causes further decline in performance

(c) The effects of audiences on performance often depend on the standard of the performer. Explain what this means in terms of *drive theory*. (4 marks)

4 marks from 4 of:

1. Straight line/linear (diagram) relationship between arousal and performance
2. Good/elite/autonomous performer – dominant response is correct – performance improves
3. Called social facilitation
4. Learner/weak/cognitive performer – dominant response incorrect – performance deteriorates
5. Called social inhibition

Using **appropriate theories**, explain how the effects of playing in front of an audience may differ for:

☐ ☐ An elite performer;

☐ ☐ A novice. (5 marks)

- A. Theory from Zajonc;
- B. Presence of audience causes increased arousal;
- C. Social facilitation;
- D. Drive theory;
- E. (Presence of others) enhances/increases emission/ likelihood/probability of dominant response/habit;
- F. Beginner/novice/cognitive stage . negative effects;
- G. Negative effect is social inhibition;
- H. Expert/elite/associative/autonomous stages . performance enhanced by presence of audience;
- I. Evaluation apprehension/equiv;
- J. Use of arousal control techniques. Max of 5 marks

(ii) How could a coach prepare a **novice** tennis player who is about to play in front of spectators for the first time? (2 marks)

- A. Use of relaxation techniques/egs/mental rehearsal/imagery/self talk/block out audience/selective attention/blocking techniques;
- B. Learn in presence of others/similar situation/introduce audience;
- C. Increase the size of the audience early;
- D. Guarantee success/weaker opposition/achievable goals;
- E. Gradually introduce evaluation; Max of 2 marks

Explain these observations in terms of *achievement motivation*. (6 marks)

1. Depends on incentive value probability of success;

2. Depends on personality traits/Nach and Naf types;
3. Nach likely to take (penalty)/Naf decline/accepts responsibility;
4. Nach . seek out challenges/takes risks/likes competition/50:50;
5. Enjoy evaluative situations/show that they can do it;
6. Not afraid of failure;
7. Approach behaviours;
8. Task persistence/seek feedback;
9. Naf . preoccupied with failure/fear of failure/avoids challenges/competition;
10. Dislike evaluative situations;
11. Likely to perform worse;
12. Avoidance behaviours/avoids challenges/avoids 50:50 situations. 6 marks

The inverted U theory may be used to explain how arousal may affect sports performance.

(a) (i) Name **two** other theories of arousal. (2 marks)

1. Drive theory;
 2. Catastrophe theory;
 3. Barons distraction conflict theory.
- 2 marks

FINE SKILLS ETC

2 marks for all 3 correct

1 mark for 1 correct

2. Putting is a Fine/complex skill . requires a lower optimum level of arousal
3. Hockey is a mixture of fine/gross therefore moderate optimum level of arousal
4. Tackling in rugby is a gross skill less complex requires high optimum levels of arousal
5. Too much/too little arousal interferes with co-ordination, cognition/decision making and/or performance 4 marks

(iii) Explain how the **required** levels of arousal vary between a novice and an elite performer. (2 marks)

1. Low optimum levels of arousal for novice performers/high optimum levels for elite performers;
2. Decision making requires low levels of arousal, as needed for new skills;
3. High arousal levels = Dominant learned response occurs
4. Novice performer = dominant response usually wrong/Elite performer = dominant response correct 2 marks

(i) Identify the theories represented by graphs **A** and **B** in **Figure 1**. (2 marks)

1. A . Drive theory;
2. B . Inverted U theory 2 marks

(ii) Describe how **each** theory may be used to explain the effects of arousal on performance. (7 marks)

Drive theory

1. Increases in motivational increase drive/arousal;
2. Increase in drive result in increases of probability of good performance;
3. Linear/straight line/proportional relationship;
4. But, not realistic . cannot keep improving;
5. Increase in arousal = increase in likelihood of dominant response;
6. If dominant response is well learned/expert performer/lead to increase in performance/elite/expert performance;
7. If dominant response is not efficient, probability of poor performance Increases/novice performer.

sub max 4 marks

Inverted U theory

- 8. Initially, as arousal increases so does performance;*
- 9. Optimal level of arousal/in the zone;*
- 10. Gives maximal level of performance;*
- 11. Further increases in arousal result in decreases in performance;*
- 12. Gross skills require higher levels of arousal/fine skills lower level of arousal;*
- 13. Need to control arousal.*

sub max 4 marks

7 marks

GOAL SETTING

Effective captains use a variety of methods to motivate their teams.

Explain the characteristics of effective goal setting. *(3 marks)*

3 marks for 3 of:

- A. (Specific) – linked to performer/sport/position
- B. (Measurable) – objective/not subjective
- C. (Agreed/accepted) – involve the performer in setting the goals
- D. (Realistic/achievable) – with performers ability/not demotivating
- E. (Time phased/long and short term goals) – set time for evaluation
- F. (Exciting/challenging) – motivate the performer
- G. (Recorded) – written for future reference/improves ownership
- H. (Outcome goal) – based on end result, eg winning the match
- I. (Performance goal) – based on performers own ability level, eg linked to personal best time/completing specific percentage pass rate
- J. (Process goal) – based on performers techniques/tactics, eg extending the arms when passing/completing a specific role within tactical formation

How might *goal setting* enhance the performance of a marathon runner? *(5 marks)*

- 1. Leads to task persistence/perseverance*
 - 2. Focuses learning/directs attention to certain skill*
 - 3. Motivates performer/mobilises effort through feedback*
 - 4. Reduces stress/anxiety*
 - 5. Increases self-efficacy/confidence*
- (sub-max 3)*
- 6. Must be specific to performer and their sport/technique/performances*
 - 7. Must be measurable in terms of objectivity/units*
 - 8. Must be agreed between performer and coach*
 - 9. Must be realistic/achievable/challenging/exciting to maintain motivation*
 - 10. Must include short and long-term goals/targets*
 - 11. Should be written down and reviewed/evaluated so that they can be amended*
 - 12. Performance goals better than outcome goals*

5) (b) When preparing for a swimming event such as the 200 metres free-style, elite performers will set themselves goals. Explain the main principles behind *goal-setting*. *(5 marks)*

- A. Use of appropriate mnemonic . SMARTER, SCAMP, SMART;
(Sub max 1 mark)
- B. (Specific) not generalised . to the athlete/the event so that the athlete knows what they are working towards and when they have reached the goal;
- C. (Controllable) . within the athlete.s control and not influenced by the performance of others;
- D. (Challenging/Exciting)) . to provide an incentive and the satisfaction of achievements/to motivate;
- E. (Attainable/Realistic) . within the athlete.s capabilities so that the performer

does not become disheartened by being unable to reach the goal;
 F. (Measurable) . use times/distances/objective measures;
 G. (Personal/Agreed) . set jointly between athlete and coach;
 H. (Written down and recordable) and available to performer/formalised;
 I. (Short and long-term/Times) so that feedback on progress can be provided and adjustments made/evaluation;
 J. Set goals for both practice and competition;
 K. Performance/individual goals used;
 L. Outcome/team goals more effective. Max of 5 marks

(a) Why should goal-setting lead to improved performance? (3 marks)

1. Task persistence;
 2. Focuses learning/target to aim for/directs attention to certain skill;
 3. Motivates performer/mobilises effort through feedback;
 4. Reduces stress/anxiety;
 5. Increases self-efficacy/confidence.
- 3 marks

(b) Explain the main principles of effective goal-setting. (5 marks)

1. SMARTER/SCAMP; (Mnemonic must be in correct order to credit)
2. Specific when not generalised . so that the athlete knows what they are working towards and when they have reached the goal/specific to themselves;
3. Controllable . within the athlete.s control and not influenced by the performance of others;
4. Challenging/exciting to provide an incentive and the satisfaction of achievement;
5. Attainable/realistic . within the athlete.s capabilities so that the performer does not become disheartened by being unable to reach the goal;
6. Measurable and recordable . use times/distances;
7. Personal/agreed . set jointly between athlete and coach;
8. Written down and available to performer;
9. Short and long-term/timed/feedback on progress can be provided and adjustments made;
10. Set goals for both practice and competition;
11. Performance/individual goals used;
12. Outcomes/team goals not as effective. 5 marks

(c) What value does goal setting have for the performer? (2 marks)

1. Identifies future target/achievement/purpose/aims/objectives for the performer;
2. In order to maintain or improve performance;
3. Assists/aids motivation;
4. Evaluation of progress/improvements. 2 marks

d) Outline the factors that make goal setting effective. (5 marks)

1. Goals should be positive/looking to improve;
2. Specific to the performer;
3. Agreed between coach and performer;
4. Formalised/written down/recorded;
5. Seen by performer as being realistic/achievable;
6. Goals must be seen as challenging by/to the performer;
7. Expressed in quantitative terms/performance goals/explanation of how the goal is measurable;
8. Using short/medium and long-term goals;
9. Subject to appropriate revisions;
10. Following evaluation;
11. Requires feedback from coach;
12. SMART/SMARTER/SCAMP. 5 marks

(i) What do you understand by the term self-efficacy? (2 marks)

2 marks for 2 of:

1. *Situation-specific self-confidence*
2. *Perception/belief of ability to cope with demands*

(ii) How can a coach help a performer to increase their self-efficacy? (4 marks)

4 marks for 4 of:

1. *Performance accomplishments*
2. *Previous/experience success*
3. *Vicarious experiences*
4. *Observing others succeed (of similar ability)*
5. *Verbal persuasion*
6. *Being convinced that they can manage*
7. *Emotional arousal*
8. *Interpretation of their own levels of arousal*
9. *Goal setting/targets*
10. *Use of performance goals*
11. *Attribute successes internally/ability*
12. *Use of positive self-talk*
13. *Use of visualisation/imagery/imagining doing it yourself/mental rehearsal.*

(a) (i) What do you understand by the term *self-efficacy*? (2 marks)

1. *Situation-specific self confidence;*
2. *Belief in ability to cope. 2 marks*

(ii) How may a coach make *vicarious experiences* a suitable method for improving self efficacy? (2 marks)

1. *Idea of watching another achieving task;*
2. *Model of similar ability;*
3. *Immediately followed by practice.*

(b) How does high self-efficacy help a performer to produce better performances? (3 marks)

1. *Increases positive attitude;*
2. *Increases motivation;*
3. *Reduces fear of failure (Naf)/increases nach;*
4. *Reduces anxiety/stress;*
5. *Enhances feeling of well-being/feel good/better;*
6. *Reach optimal level of arousal.*

(c) (i) What do you understand by the term *self-efficacy*? (2 marks)

1. *Belief in ability to cope;*
2. *Situation specific; 2 marks*

(ii) What strategies may be used to improve the self-efficacy of a performer? (5 marks)

1. *Performance accomplishments;*
2. *Previous success;*
3. *Vicarious experiences;*
4. *Watching others being successful/modelling;*
5. *Verbal persuasion;*
6. *Encouragement;*
7. *Emotional arousal;*
8. *Interpretation of own levels of arousal;*
9. *Visualisation/imagery; 5 marks*

(a) Explain what you understand by the term *self-efficacy*. (2 marks)

1. *Situation-specific confidence;*
2. *Perception/belief of ability to cope with demands. 2 marks*

(b) What strategies could a coach employ to improve the *self-efficacy* of a performer? (6 marks)

1. Past performances/performers accomplishments;
 2. Provide opportunities for player to experience success;
 3. Vicarious experiences;
 4. Observing others succeed (of similar ability);
 5. Verbal persuasion;
 6. Convince performer they have the ability/skills to succeed;
 7. Emotional arousal;
 8. Help performer interpret their arousal in a positive way;
 9. Goal setting/targets;
 10. Use of performance goals;
 11. Internal attributions/ability;
 12. Use of positive self-talk;
 13. Visualisation/imagery/imagining doing it yourself.
- (Do not credit mental rehearsal) Max 6 marks

Discuss the suggestion that personality questionnaire can be an effective predictor of performance. (4 marks)

4 marks for 4 of:

A. Named personality test – EPI, (Cattell) 16PF, SCAT, STA1, POMS, Achievement Motivation (Nach & Naf questionnaires)

Agree

B. Credulous approach

C. Personality traits linked to specific types of sports/characteristics of elite performance, eg calm under pressure/not aggressive/equiv

D. Used as part of talent identification programmes

E. Iceberg profile (Profile of mood states)

F. Linked into high levels of vigour

Disagree

G. Sceptical approach

H. No clear link between success/choice of sport and personality type

I. Research often contradicts each other

J. Personality can change due to situation

Conclusion

K. Neither approach has proved conclusive/no clear evidence to make accurate predictions.

Explain how 'approach behaviour' can be developed within the team. (4 marks)

- A. Positive experiences/give success/avoid negative feelings
- B. Gradually increase task difficulty
- C. Goal setting
- D. Use positive feedback and praise/support from significant others
- E. Reduce punishment
- F. Encourage risk taking
- G. Use attributions correctly
- H. Develop high levels of self-efficacy/avoid learned helplessness

- 1) Description – a graph to show POMS
- 2) Six measures
- 3) Iceberg profile
- 4) Have vigour score and lower levels of other scores
- 5) Some elite performers do not have this profile

Explain how the *interactionist* theories of personality enable us to predict the behaviour of performers. (3 marks)

1. Behaviour is a function of personality and environment
2. $B = f(P, E)$
3. Leads to stable behaviour in a certain situation

4. Change environment change behaviour

Explain the *trait theory* of personality. (3 marks)

1. Inherited/genetic/born with;
2. Enduring/stable/unchanging;
3. Predisposition to behave in a certain way;
4. Consistent/same behaviour all of the time;
5. Eysenck and introvertism/neuroticism/Catell and 16PF;
6. Role of Reticular Activating System (RAS) and arousal explained

(a) Morgan's (1987) 'Profile of Mood States' questionnaire measures the emotional state of performers.

How would you expect the profiles to differ between elite performers and fun runners? (3 marks)

- A. Elite athletes . iceberg profile;
 - B. Higher scores on vigour;
 - C. Lower scores on other emotional states/a suitable eg, such as anger, confusion, depression, tension, fatigue (only need 1);
 - D. Fun runners . flatline of population norm/average person/normal person.
- ax 3 marks

(a) (i) Briefly explain *personality* according to *trait theory*. (3 marks)

1. Pre-disposition to behave in a certain way/consistent/same behaviour
2. Inherited/genetic/born with/innate;
3. Enduring/stable/unchanging/same personality;
4. Eysenck and introvertism/neuroticism/Catell and 16PF; 3 marks

(ii) Sport may increase or decrease the likelihood of aggressive behaviour occurring among competitors. How may *trait theory* be used to explain *aggression* in sport? (2 marks)

1. Instinct/drive to be aggressive/build up;
 2. Shown as release of aggressive tendencies through sport;
 3. Catharsis;
- 2 marks

(iii) Explain how *trait anxiety* affects a performer. (3 marks)

1. Tendency to become anxious in most situations;
 2. Affects state anxiety/Higher competitive state anxiety
 3. Competition seen as threatening/higher (evaluation) apprehension;
 4. Increased cognitive/somatic anxiety
 5. Fear of failure/worries about performance/making mistakes/loss of concentration/nervous/HR/sweaty palms/butterflies/nausea/worries about performance;
 6. Increases arousal;
- Arousal can have a positive or negative effect on performance; 3 marks

4) Many sporting competitions are now decided by 'penalty shoot-outs'. In these situations, some performers readily accept responsibility while others prefer not to be involved.

Explain these observations in terms of *achievement motivation*. (6 marks)

1. Depends on incentive value probability of success;
2. Depends on personality traits/Nach and Naf types;
3. Nach likely to take (penalty)/Naf decline/accepts responsibility;
4. Nach . seek out challenges/takes risks/likes competition/50:50;

5. Enjoy evaluative situations/show that they can do it;
6. Not afraid of failure;
7. Approach behaviours;
8. Task persistence/seek feedback;
9. Not preoccupied with failure/fear of failure/avoids challenges/competition;
10. Dislike evaluative situations;
11. Likely to perform worse;
12. Avoidance behaviours/avoids challenges/avoids 50:50 situations. 6 mark

(c) In terms of personality, explain what is meant by *trait* and *interactionist* theories

1. Traits . innate/inherited/stable/enduring factors;
2. Same personality in all situations/pre-disposition to behave in the same way;
- Sub max 2 marks
3. Interactionist . concerned with traits;
4. And interaction with the situation;
5. $B = f(P.E.)$. Sub max 2 marks

(d) One aspect of personality is *achievement motivation*. What are the characteristics of an individual with a motive to achieve success? (4 marks)

1. Seek out challenging situations;
2. Concerned with high standards of performance;
3. Task persistence;
4. Approach behaviours;
5. Enjoy evaluative situations;
6. Not afraid of failure;
7. Value feedback from others/coach;
8. Attribute performance to internal factors/effort/ability. 4 marks

Morgan's Profile of Mood State (POMS) is a questionnaire given to performers to establish their relative measures on the six mental health states of fatigue, vigour, tension, depression, anger and confusion.

(a) Research has shown that the profile for POMS differs between elite and non-elite performers. Describe these differences. (3 marks)

1. Elite score higher on vigour/anger;
 2. No difference/lower on other scores for both elite and non elite;
 3. Iceberg profile;
 4. Iceberg profile does not guarantee an elite performer 3 marks
- (Credit annotated diagrams showing iceberg profile)

(b) What are the advantages and disadvantages of using questionnaires to provide psychological information? (4 marks)

Advantages

1. High researcher: respondent ratio/lots of subjects at a time/quick/efficient;
 2. Cheap/cost effective;
 3. Numerical/objective measures achieved;
 4. Reliable. Sub max of 3 marks
- (Do not credit easy)

Disadvantages

5. Weak validity/non specific/too general/too simplistic for complex areas;
 6. Tendency to give expected answer/lie/respond with demand characteristics/biased questions;
 7. Difficult to self-assess;
 8. Ambiguous questions/misinterpretation. Sub max of 3 marks
- 4 marks

4) The outcome of a sprint race may be determined by a performer's personality and ability to overcome and generate forces to provide acceleration and maintain velocity.

(a) The performance and behaviour of sports performers may be affected by their personalities.

Discuss this statement, using suitable examples, with reference to both *trait* **and** *interactionist* theories of personality. (7 marks)

Trait theory

1. *Inherited characteristics/born with/innate/genetic;*
2. *Stable/enduring/unchanging;*
3. *Same behaviour in a variety of situations;*
4. *Behaviour is predictable.*
5. *E.g. aggressive in all situations/extrovert in all situations/etc.*

Sub max 4 marks

Interactionist theory

6. *$B = f(PE)$ /behaviour is a function of personality and environment;*
7. *Inherited traits are amended by environment/situation;*
8. *Leads to stable behaviour in a certain situation;*
9. *Change environment change behaviour.*
10. *Eg: normally calm, but becomes aggressive in sport environment.*

sub max 4 marks

7 marks

ACHIEVEMENT MOTIVATION

Explain the factors that contribute to a performer's level of 'achievement motivation'. (3 marks)

- A. *Achievement motivation = desire to succeed – fear of failure*
- B. *Interactionist approach/depends on the personality and the situation*
- C. *(Personality) – either Need to Achieve (nAch) **or** Need to Avoid Failure (nAf)*
- D. *(Situation) – probability of success*
- E. *(Situation) – incentive value of success*

Achievement motivation is an aspect of personality. Which type of achievement motivation is most likely to occur in elite performers? Justify your answer. (4 marks)

1. *Nach-type/need to achieve*
- (sub-max 3)*
2. *Seek out challenging situations/50:50 situations/take risks*
 3. *Concerned with high standards of performance*
 4. *Enjoy evaluative situations*
 5. *Not afraid of failure*
 6. *Value feedback from others/coach*
 7. *Attribute performance to internal factors/effort/ability*
 8. *Approach behaviour*
 9. *Task persistence*
 10. *High self efficacy/self confidence*

What are the characteristics of a performer with a motive (need) to achieve (n.Ach)? (4 marks)

1. *Approach behaviours;*
2. *Take risks/enjoy challenges/50/50 situations;*
3. *Wanting to improve/be the best/stand out player;*
4. *Task persistence/keeps trying;*
5. *Welcomes feedback;*
6. *High self-efficacy/confidence;*

7. Attribute performance/evaluative situations;
8. Unafraid of failure/low Naf. 4 marks

Using **one** named psychological theory, outline how the negative attitude of an individual or of a team can be changed. (4 marks)

- A. Persuasive communication
- B. Status of messenger/person delivering information/significant other
- C. Quality of message/new information
- D. Situation/time when message is given
- E. Individual's resistance to change
- F. Cognitive dissonance
- G. Attempts to create conflict in thoughts/beliefs/alter one part of Triadic Model/psychological discomfort
- H. Cognitive – give new information/education
- I. Affective – create new emotions/enjoyment/fun/feeling of safety or equiv.
- J. Behavioural – give success/reinforcement

9) Name and explain the components of attitudes, giving an example of how a tennis player would display a positive attitude. (3)

- 1) Cognitive – believe / think they are training and playing a correct manner
- 2) Affective – Positive feelings/ emotions / enjoyment
- 3) Behavioural – Actions of the players / train regularly.

Elite performers usually have a positive attitude towards training. If this were not the case, briefly outline how attitudes to training could be changed. (3 marks)

1. Change thoughts/beliefs to affect behaviour;
2. Persuasive communication;
3. High status/role model/significant others/coach;
4. Cognitive dissonance.

(a) (i) What is meant by the term *attitude* and how are attitudes formed? (4 marks)

1. Thoughts/cognitive;
2. Emotional response/feelings/affective;
3. Attitudes are not global but specific to the performer;
4. Producing behaviour;
5. To a specific object/situation;
6. Learned;
7. Significant others/parents/peers/role models. 4 marks

(ii) Discuss whether attitudes help predict behaviour. (3 marks)

1. Behaviour does not always follow thinking/feelings;
2. Other factors/conflicts/available time/social interactions affect behaviour;
3. Specific attitudes predict specific behaviours;
4. Best predictor of behaviour is behavioural intention;
5. Especially if situational factors are also favourable. 3 marks

Discuss the 'social learning theory' of aggression. (4 marks)

1. Aggressive behaviours are learned
2. Non-aggressive behaviours can also be learned
3. Through observation/copying/modelling
4. Observation of realistic events more likely to affect learning
5. Observation of more 'high status'/roles models/performers significant others
6. Imitation more likely if learner thinks behaviour will be reinforced
7. Or thinks it will not be punished; e.g. – approved by team mates/coach/audience/behaviour goes unpunished

What can a referee do to control aggression during a major sporting competition?
(3 marks)

1. *Talking to/pre-warning players*
2. *Apply rules properly/correctly/fairly*
3. *Punish aggressive behaviour/examples*
4. *Immediate sanctions*
5. *Be consistent in judgements/sanctions*

(a) (i) Explain the terms *hostile aggression* and *instrumental aggression*. (2 marks)

1. *Hostile – reactive/solely to harm/planned/involves anger*
2. *Instrumental – channelled/means to a goal/no anger involved/use aggression to get result*

(ii) Explain how *frustration* may lead to *aggression*. (4 marks)

1. *Performer tries to achieve goal*
2. *Opposition block/stop/tackle*
3. *Leads to frustration and possible aggression*
4. *Build up of frustration – more likelihood of aggression*
5. *Aggression reduces frustration/catharsis*
6. *(Berkowitz's) aggressive cues – greater likelihood of aggression*

(iii) How might a coach try to reduce the aggressive tendencies of one of their players? (3 marks)

1. *Praise/reinforce assertive behaviour*
2. *Remove cues/factors causing aggression*
3. *Remove/penalise aggressive player*
4. *Teach stress management techniques to reduce arousal/relaxation*
5. *Teach cognitive techniques/imagery/self-talk*
6. *Encourage performance-related rather than outcome related goals*
7. *Stop encouraging/reinforcing aggressive behaviour*

(b) (i) Use the *frustration–aggression theory* to explain why this may happen. (2 marks)

- A. *Goals blocked/suitable eg/opposition/defending/referees;*
 - B. *Increases aggression/anger;*
 - C. *Frustration leads to aggression/aggression always stems from frustration;*
 - D. *Aggression is immediate relief of frustration/catharsis.*
- 2 marks

(ii) Explain why incidents of aggression occur only occasionally in team games such as rugby. (2 marks)

- A. *Social learning theory;*
- B. *Learn to behave/learn to follow/know the rules/learn to be assertive;*
- C. *Aggression only if cues/signals/triggers present*
- D. *Arousal may be channelled.*

1) a) (ii) Sport may increase or decrease the likelihood of aggressive behaviour occurring among competitors. How may *trait theory* be used to explain aggression in sport? (2 marks)

1. *Instinct/drive to be aggressive/build up;*
 2. *Shown as release of aggressive tendencies through sport;*
 3. *Catharsis;*
- 2 marks

(a) (i) What are the similarities and differences between *aggressive* behaviour and *assertive* behaviour in sport? (3 marks)

Assertive

1. Overt physical
2. Examples e.g. rucking out
3. Within laws of game
4. No intent to harm/injure opponent

Aggressive

1. Overt physical/verbal abuse
2. Example punching below the belt
3. Outside laws of the game
4. Intent to harm / injure opponent

(ii) Discuss the *social learning* theory of aggression. (5 marks)

1. Aggressive behaviours are learned;
2. But equally, can learn non-aggressive behaviour;
3. Through observation/watching/copying/modelling;
4. Observation of realistic events more likely to affect learning;
5. High profile of performer/role models/high status/significant other;
6. Imitation more likely if learner thinks behaviour will be reinforced;
7. Or imitation more likely if they think it will not be punished;
8. e.g. approved by team mates/coach/audience/not booked. 5 marks

(i) Distinguish between *aggressive* and *assertive* behaviour. (3 marks)

1. Aggression . intent to harm;
2. Outside laws of game/illegal;
3. Assertion . no intent to harm;
4. Within laws/legitimate. 3 marks

(ii) Using your knowledge of appropriate theories, discuss the idea that playing contact sports **may** increase **or** reduce *aggressive* behaviour within the game situation. (6 marks)

1. Instinct/trait theory/innate/ born with aggression; (must qualify to credit)
 2. Aggressive in all situations including sport;
 3. Possible that aggression may be channelled/reduced through sport;
 4. Catharsis/letting off steam;
 5. Frustration leads to aggression/frustration-aggression hypothesis; (must qualify to credit)
 6. Defending/game/opponents/referee making bad decisions creates frustration leading to aggression;
 7. Tendency for sport to increase aggression;
 8. Social learning . learned through observation; (must qualify to credit)
 9. Imitation and reinforcement;
 10. Possible to learn that aggression can lead to success;
 11. Instrumental aggression;
 12. Especially when not punished or accepted as normal/reinforced;
 13. Hence need for officials to punish aggressive behaviour;
 14. To control its incidence;
 15. Aggressive cue hypothesis . trigger response through previous negative experiences.
- (Points must be related to theory in order to credit) 6 marks

GROUP DYNAMICS

Identify and explain Carron's antecedents (factors) that contribute to the cohesiveness of a group. (3 marks)

3 marks for 3 of:

- A. Environment/situational factors – size of group/time/facilities/age or equivalent
- B. Member/personal factors – ability/motivation/satisfaction/similarity of group or equivalent
- C. Leadership factors – style/behaviour/personality/relationship with

group or equivalent

- D. Team factors – task/motivation/stability/ability/shared experiences or equivalent
- E. Four correct factors named but no explanation

MAY, 2011

Explain the importance of cohesion to group productivity and outline possible strategies that can be used to reduce the negative impact of faulty processes on performance. (14 marks)

Importance of Cohesion

- A. Cohesion – tendency of a group to stay together to achieve their goal/task
- B. Cohesion depends on group members/task/leader/teambased factors/equiv.
- C. Actual productivity = potential productivity – losses due to faulty processes
- D. Co-ordination losses/faulty processes eg poor teamwork/ poor tactics
- E. Motivational losses/faulty processes eg loss of concentration/low self-confidence
- F. Social loafing – performer 'hides' within a team
- G. Ringelmann effect – Performance/cohesion may decrease as group size increases
- H. Task cohesion – ability of group to work together to achieve a common goal
- I. Social cohesion – interaction of players and their interpersonal relationships
- J. Task cohesion is more important than social cohesion/ team can be successful with poor social cohesion
- K. Social cohesion can undermine performance/formation of cliques/not challenging poor performance for fear of upsetting others
- L. Social cohesion can aid performance by challenging the norm

Strategies

- M. Practice/training to ensure all understand the tactics
- N. Give individuals specific responsibility/set goals
- O. Explain specific roles within the team
- P. Give feedback/video analysis of performance/ reinforcement
- Q. Develop peer support/encourage each other/encourage open discussion/an effective leader
- R. Vary practice to maintain motivation/train in small groups
- S. Improve fitness levels
- T. Team bonding exercises/social outings
- U. Avoid social cliques
- V. Create a group identity eg team kit
- W. Develop self-confidence/self-efficacy/self-esteem/ credit use of attributions
- X. Maintain team stability if possible/limit change

14) Explain the term task cohesion and why it is vital for success in any game (4)

- 1) The ability of the group to achieve a common goal.
- 2) Players need to be able to interact effectively / good communication
- 3) Understand own role – good co-ordination
- 4) Poor cohesion is a faulty process
- 5) Good task cohesion means good social cohesion
- 6) Social cohesion – the ability for the group to relate well to each other

(a) Name **and** explain the stages that groups tend to go through before they become established as a successful team. (4 marks)

- 1. Forming – get to know each other/relationships
- 2. Storming – roles become established, often contentious/conflict/equiv
- 3. Norming – stability/co-operation/cohesive
- 4. Performing – roles and relationships established/feel part of team/working towards common goals

(b) (i) According to Steiner, a team's actual productivity depends upon their potential productivity less their faulty processes. What are the **two** main faulty processes that can limit a team's productivity? (2 marks)

1. *Motivational factors*
2. *Co-ordination factors*

(ii) Distinguish between *social loafing* and the *Ringlemann effect*. (2 marks)

1. *Social loafing – reduced motivation/effort*
2. *Ringlemann effect – more people - less effort/co-ordination*

Team games, such as basketball, require individuals to work together. Steiner (1972) suggested that the relationship between the individual members of a team and their overall performance may be expressed as:

actual productivity = potential productivity – losses due to faulty group processes

(a) (i) Explain the terms actual productivity and potential productivity **and** identify factors that might affect the **potential** productivity of a team. (4 marks)

1. *Actual productivity – performance achieved by a team*
2. *Potential productivity – teams' possible best performance*
3. *Depends on resources eg ability/skills/knowledge/fitness/experiences etc*
4. *Second eg given*

(ii) What are the possible causes of losses due to faulty group processes? (4 marks)

1. *Co-ordination losses*
2. *Player's skills are not interwoven into unity/tactical failings/lack of teamwork*
3. *More interactive sports suffer the more difficult co-ordination losses/accept reverse*
4. *Ringlemann effect*
5. *Less interactive/co-active sports suffer less from co-ordination losses/accept reverse*
6. *Motivational losses*
7. *Social loafing*
8. *Players feel they can expect others to do the work*

(a) What antecedents (factors) may affect the cohesiveness of a group? (4 marks)

1. *Size of group;*
2. *Similarity of status/ability/performance level;*
3. *Type of sport/interactiveness of the activity;*
4. *Stability of group members;*
5. *External threats/outside influences;*
6. *Satisfaction of team members/get on well together/share the same goals/role acceptance;*
7. *Success of group;*
8. *Leadership/style/type.*

(b) Name and explain the **four** stages that teams (groups) go through during their formation. (4 marks)

1. *Naming the four stages in correct order;*
2. *Forming – getting to know each other/each others' roles/find your place in the team/establish early roles;*
3. *Storming – stage of conflict/rebellion trying to establish roles/status;*
4. *Norming – become cooperative/cohesive;*
5. *Performing – primary aim is group success/roles and relationships established/working towards a goal.*

What do you understand by the term *cohesion* **and** explain the different types of cohesion. (3 marks)

A. (Forces) keeping a group together/resistance to breaking up/team works together;

*B. Task cohesion . working to common goals/targets/tasks;
C. Social cohesion . interpersonal attraction/liking each other/socialising together. 3 marks*

(d) Social loafing can occur within sports teams. What do you understand by the term **social loafing** and what factors may cause it? (5 marks)

*A. Individuals put in less than 100% effort/lack of motivation/can't be bothered;
sub max 1 mark*

B. Individual.s output not measured effectively/able to hide/shirk responsibility;

C. Task/goal lacks meaning for the individual/;

D. Individuals. personal involvement is low/role conflict/not understanding the role/lack of assigned role/disagree with role/;

E. Individual.s efforts cannot be compared to group standards/lack of fitness;

F. Some of the group are not known to other individuals/sub groups/cliques/limited cohesion/;

G. Individual expects other co-workers to do well/relying on others;

H. Individual believes his efforts will go unnoticed/undervalued/unappreciated;

I. Easier to loaf with more people sub max 4 marks

Steiner (1972) suggested that the relationship between the individual members of a team and their overall performance may be expressed as:

actual productivity \square \square potential productivity – losses due to faulty group processes

(a) (i) Explain the terms *actual productivity* and *potential productivity*, and the factors that might affect them. (3 marks)

1. Actual productivity . performance achieved by a team;

2. Potential productivity . teams. possible best performance;

Sub max 2 marks

3. Depends on resources;

4. E.g. ability/skills/knowledge/fitness. 3 marks

(ii) Suggest potential causes of *losses due to faulty group processes*. (4 marks)

1. Co-ordination losses;

2. Player.s skills are not interwoven into unity/tactical failings/lack of team work;

3. More interactive the sports the more difficult co-ordination of skills become/accept reverse;

4. Ringlemann effect;

5. Motivational losses;

6. Players not playing to their best/not trying

7. Social loafing; 4 marks

Explain how leadership styles should be adapted depending on the different characteristics such as age, gender, size and skill levels of a team. (4 marks)

1. Younger teams . relation-orientated preferred/democratic/person orientated;

2. Older teams . autocratic/task-orientated/authoritarian/command;

3. Female teams . democratic style/person orientated;

4. Males . autocratic style/command style;

5. Highly skilled prefer relationship-orientated;

6. Weaker players prefer task-orientated;

7. Larger . autocratic/command style;

8. Smaller . democratic;

4 marks

(a) How would you distinguish a *group* from a collection of individuals? (4 marks)

1. Collective identity;

2. Shared norms/values;

3. Sense of shared purpose/common goals;

4. Interaction between members/efforts of one affect the other;
5. Structured methods/hierarchy of communication;
6. Task interdependence/work together/task cohesion;
7. Interpersonal relationships/social cohesion;
8. Independence from others. Max 4 marks

(b) Name **and** explain the stages that lead to group formation. (4 marks)

1. Named all four stages (in correct order);
2. Forming . getting to know each other/each other.s roles;
2. Storming . stage of conflict/rebellion trying to establish roles/status;
3. Norming . become co-operative/cohesive/work together/same norms/values/accepting roles;
4. Performing . primary aim is group success/common goal/roles and relationships effective/role acceptance. 4 marks

(c) Discuss whether cohesive groups are always more successful. (3 marks)

1. Initial eccentric/downward contraction;
2. Stimulates muscle spindle apparatus/detects stretch;
3. (Sensory) nerve impulses to CNS;
4. Role of gamma motor neurons;
5. Spindles are adapted muscle fibres;
6. Added to normal fibres/intrafusal fibre contraction;
7. (Concentric) contraction more powerful/greater force produced;
8. More overload/power/fitness gains. Max 4 marks

(a) (i) What do you understand by the term *group cohesion*? (3 marks)

1. Forces tending to keep members within a group;
2. Forces preventing disruption of a group;
3. Forces tending to foster commitment to group norms/values;
4. Task cohesion;
5. Commitment to task;
6. Social cohesion;
7. Commitment to social goals of group. 3 marks

(ii) Explain how the size **and** structure of a group may affect its cohesiveness. (3 marks)

1. Generally the larger the group the greater the productivity;
2. But group can get too large;
3. Leading to formation of sub-groups or cliques;
4. And loss of productivity;
5. Breakdown in co-ordination strategies/ Ringleman effect
6. Poorly-led or disorganised groups may perform worse than smaller groups;
7. Social loafing;
8. Reduction in commitment/motivation;
9. Reduced cohesiveness if obvious/known participants;
10. Cohesion is better if they have similar status. 3 marks

(iii) Discuss whether cohesive groups are always more successful. (3 marks)

1. Not clear whether success leads to cohesion or cohesion leads to success;
2. Usually cohesive groups lead to success;
3. Exceptions usually involved where joint goals override personal dislikes;
4. Task cohesion greater than social cohesion;
5. Many other factors involved in success apart from cohesion/e.g personality/ability/leadership are involved in success apart from cohesion. 3 marks

Outline the characteristics of a favourable situation **and** name the style of leadership that should be used when this occurs. (4 marks)

- A. Task-centred/task-orientated/autocratic leadership style*
- B. Leader respected by group*
- C. Leader has good relationship with group*
- D. Group highly motivated*
- E. Group high ability/highly successful*
- F. Clear task/goal/roles*
- G. Good support network*
- H. Good resources/equipment/facilities*

Identify **three** characteristics of a good leader **and** explain the difference between an emergent leader and a prescribed leader. (3 marks)

- A. Characteristics: confident/organised/inspirational/good communicator/knowledgeable/visionary/good decision maker/ interpersonal skills/approachable/ determined/empathy/charismatic/motivational/ equiv.*
- B. Emergent leader – group approval/elected by the team*
- C. Prescribed leader – appointed by external authority to lead the group*

Fiedler (1967) suggested that the effectiveness of leaders depended on the situation and the style of leadership.

(i) Describe the **two** styles of leadership identified by Fiedler and the situation in which each is most effective. (2 marks)

- 1. Task-orientated/autocratic and relationship-orientated/personorientated/ democratic*
- 2. Task-orientated/autocratic – most and least favourable and relationshiporientated/ person-orientated/democratic – moderately favourable*

(ii) The effectiveness of these styles depends on whether the situation is favourable. What factors determine the 'favourableness' of the situation?

- 1. Quality of leader's relationship with group*
- 2. Leader's level of authority*
- 3. Resources available eg facilities/equipment/time*
- 4. Demands of task/environment/danger*

(d) Using examples, explain why a leader, when choosing a leadership style, needs to consider the characteristics of the group they are leading. (2 marks)

2 marks for 2 of:

- 1. Larger group – task – orientated/autocratic or smaller group – relationorientated/ democratic*
- 2. Younger teams – relation-orientated/democratic or older teams – autocratic/task-orientated*
- 3. Female teams – relation-orientated/democratic or males – task orientated/autocratic style*
- 4. Elite/highly skilled prefer relationship-orientated/democratic or novices/weaker players prefer task – orientated/autocratic*

(a) What do you understand by the term *dynamic interactional process*? (4 marks)

- A. Effective leaders should change style of leadership;*
- B. Leader has preferred style;*
- C. Situational preference/situation demands a certain style;*
- D. Team members demand a certain style;*

E. Performer.s satisfaction/performance best when all preferences match/congruent;
F. Task-oriented/autocratic leader . focuses on team performance;
G. Relationship-oriented/democratic leaders develop/person orientated/concerned with inter-personal relationships;
H. Some members have traditional preferences/loath to change/suitable examples. 4 marks

Identify Fielder's **two** leadership styles and describe the situations in which each type of leader would be most effective. (4 marks)

1. Task-orientated/autocratic; (not command style)
2. Relationship/person-orientated/democratic;
3. Task-orientated/autocratic best in very favourable or very unfavourable situations;
4. Example related to point 3/winning/doing well/being successful/supportive parents/good facilities/discipline structure/strong leadership position;
5. Relation-orientated best in moderately favourable situations;
6. Example related to point 5/opposite of examples given in 4. 4 marks

Explain how leadership styles should be adapted depending on the different characteristics such as age, gender, size and skill levels of a team. (4 marks)

1. Younger teams . relation-orientated preferred/democratic/person orientated;
2. Older teams . autocratic/task-orientated/authoritarian/command;
3. Female teams . democratic style/person orientated;
4. Males . autocratic style/command style;
5. Highly skilled prefer relationship-orientated;
6. Weaker players prefer task-orientated;
7. Larger . autocratic/command style;
8. Smaller . democratic;
4 marks

(c) Describe how, according to Chelladurai's multidimensional model (1980), effective leadership leads to good performance outcomes and member satisfaction. (3 marks)

1. Occurs when - required behaviour from/by situation;
2. Actual behaviour of leader;
3. Preferred behaviour of performer;
4. All match/are congruent.
(Accept annotated diagram showing links) 3 marks

4) Team game players often look to their leader to assist their performance.
 (a) (i) Distinguish between *emergent* and *prescribed* leaders. (2 marks)

1. Emergent - from within group/elected; (do not credit emerge)
2. Prescribed - selected by someone outside the group/imposed. 2 marks

Using **Figure 2**, discuss the idea that leaders need to be adaptable in their approach. (6 marks)

1. Successful leadership dependant on interaction;
2. There are a variety of leader characteristics/styles;
3. e.g. autocratic/democratic/laissez-faire;
4. Best to adapt style to situation/group/members characteristic/
5. Individuals vary in preferred style of leadership;
6. And in expectations of leadership role;
7. e.g. task orientated/autocratic preferred in team sports/groups;
8. e.g. person orientated/democratic preferred in individual sports/moderately favourable situations;
9. Situation varies in terms of demands it makes of leader/state of group (age/size/gender)/dangerous/least favourable;

10. Task orientated/authoritarian approach needed when quick decisions needed/short preparation time available/least or most favourable situation.
6 marks

Discuss the suggestion that 'home field advantage' will always improve the performance of the home team. (4 marks)

Agree

- A. Home support tends to improve performance/social facilitation effect/boost self-efficacy/lower levels of anxiety
- B. More matches won at home than away/during early rounds of competitions/Olympic & World medals by host nation
- C. Home teams tend to play more attacking styles/ tactics/functional aggressive behaviour (accept reverse answer)
- D. Proximity effect/closeness of crowd has negative effect on visiting teams
- E. Larger crowd/hostile crowd has a negative effect on visiting teams
- F. Away team commit more fouls/can become anxious/over-aroused due to crowd or unfamiliar surroundings

Disagree

- G. Increased pressure from the home crowd
- H. More important the game the greater the pressure/ choke effect/championship choke
- I. Performers become more self-conscious at home causing over-arousal
- J. Players place more pressure on themselves at home matches due to expectations
- K. Social inhibition for the home team
- L. Evaluation apprehension for the home team

Explain the concept of social facilitation and how it can affect performance. Outline the possible strategies which the performer and coach may use to limit any negative effects that may occur. (14 marks)

- 1) Social Facilitation – the influence of others and the effect on performance.
- 2) Social Inhibition – the negative effect of the audience
- 3) Audience – watching at event or at home
- 4) Co-actors – performing same task but not in competition
- 5) Competitive co-actors – in direct competition
- 6) Social Reinforcers – direct influence e.g coach
- 7) Linked to drive theory
- 8) As arousal increases so does performance – dominant habit
- 9) Experienced players perform better
- 10) Novice players perform worse
- 11) Evaluation Apprehension suggests only others have influence if performer feels they are being judged.
- 12) Baron's Distraction-Conflict Theory – suggests performers should focus on task not crowd.

POSSIBLE STRATEGIES:

- 1) Mental Rehearsal
- 2) Train in front of others
- 3) Improve selective attention
- 4) Reduce the importance of the match
- 5) Avoid social comparison with coach, teachers.
- 6) Encourage team mates to be supportive
- 7) Use stress management techniques
- 8) Goal setting
- 9) Use attributions correctly
- 10) Ensure skills are overlearned.

SPECIMEN: PHED 3:

Discuss the effect that the presence of an audience may have upon the level of performance for a novice performer **and** an elite performer. (4 marks)

1. Presence of an audience increased arousal/anxiety
2. Can lead to either social facilitation
3. Or social inhibition
4. Increase in arousal will cause the dominant response
5. Novice – not well-learned – poorer performance
6. Elite – well-learned – improved performance
7. Complex skill more difficult to perform/simple skill easier to perform
8. Will also have an impact if they feel the crowd is evaluating them/evaluation apprehension
9. The importance of the crowd will also dictate the level of arousal

3) (b) Some weightlifters appear to perform well in front of an audience, while others seem to perform badly, “choking” under the pressure. Use *social facilitation* theory to explain this observation. (7 marks)

1. Theory from Zajonc;
2. Presence of audience causes increased arousal;
3. Increased drive/arousal means performer tries harder/drive;
4. Increased likelihood of learnt dominant response;
5. Effects depend on stage of learning;
6. Early/cognitive stage . negative effects/social inhibition;
7. Performer not fully developed appropriate response to demands;
8. Later/associative/autonomous stages . performance enhanced by presence of audience;
9. Enhancement effect more likely if simple task/gross skill;
10. Impairment effect more likely if complex task/fine skill;
11. If they think they are being judged negative effect is enhanced;
12. This is known as evaluation apprehension. 7 marks

How would a captain use knowledge of self-serving bias to motivate their team? (4 marks)

- A. (self-serving bias) correct use of attributions to protect self-esteem/self-efficacy/self-confidence/avoid learned helplessness
- B. Attributing success to internal – stable factors/ability
- C. Attributing success to internal – unstable factors/effort
- D. Attribute failure to controllable factors
- E. Attributing failure to internal – unstable factors/effort
- F. Attributing failure to external – stable factors/task difficulty
- G. Attributing failure to external – unstable factors/luck

JUNE 2010

10) How would a coach use attribution theory to maintain motivation following a defeat? (4)

- 1) Attributions – perceived reasons for outcomes / performance
- 2) Failure to internal-unstable factors – effort
- 3) Failure to external – unstable factors – luck
- 4) Failure to external – stable factors – task difficulty
- 5) Failure to external control – e.g. those areas which players cannot control
- 6) Self serving bias
- 7) Attribution re-training

What are the **four** main groups of ‘attributions’? (2 marks)

1. Luck
2. Effort
3. Task difficulty
4. Ability

What do you understand by the term ‘learned helplessness’ **and** what strategies may a coach use to prevent this happening? (5 marks)

1. Learned helplessness – idea that failure is inevitable/examples
2. Can be applied globally or to specific situations
3. Normally caused by player attributing wrong factor to failure e.g. an internal and stable reason rather than external and unstable

4. Possibly leading to the idea of giving up even when success is possible/examples
- Strategies to overcome**
5. Coach to enable player to achieve success/play weaker opposition/examples
6. Encourage view that success due to stable /internal factors – ability/examples
7. That failure due to unstable/external factors – effort or luck/examples
8. Attribution retraining

JUNE 2008:

In terms of attribution theory, explain what is meant by *self-serving bias* **and** *learned helplessness*. (4 marks)

1. *Self-serving bias – blaming success on internal factors/failure on external factors*
2. *Maintains self-esteem/feel better about themselves*
- Sub max 3 marks
3. *Learned helplessness – failure is inevitable*
4. *Eventually give up/stop trying*
5. *Attributed failure to internal factors/success to external factors*
6. *Can be specific or global*

JAN, 2008:

Performers may attribute their success and/or failure to various factors. What do you understand by the term *attribution retraining*, **and** when would it become necessary? (3 marks)

1. Attribution training – changing the reasons given for failure;
2. Incorrect attributions affect performer's persistence/performance/expectations/satisfaction/cause learned helplessness;
3. Work with individual to change/improve techniques;
4. Encourage performer to attribute success to internal factors/ability/effort;
5. Help performer change attributions for failure as being due to external unstable factors/luck/task difficulty;
6. Attribute failure to controllable factors.

(c) What do you understand by the term *learned helplessness* **and** suggest the likely cause of it? (3 marks)

1. *Inevitable/expectation of failure;*
2. *Loss of motivation/leading to giving up;*
3. *Global/specific;*
- sub max 2
4. *Attribute failure to stable/internal factors/ability;*
5. *Suitable e.g./keeps losing to same competitor* 3 marks

(d) Sufferers of learned helplessness may require attribution retraining. Explain what *attribution retraining* is **and** suggest why it is effective. (3 marks)

1. *Idea of realising that failure is not inevitable/teaching appropriate attributions;*
- Sub max 1 mark
2. *Allow performer to achieve success;*
3. *Attribute success to stable/ internal/ability/controllable factors;*
4. *Attribute failure to unstable/external factors/luck/task difficulty/effort/*
5. *Improve self-esteem/confidence/feel good/motivation;* 3 marks

(c) (i) What are the **two** dimensions of attributions? (2 marks)

1. *Internal/external/causality;*
2. *Stable/unstable/stability.* 2 marks

(ii) What are the **four** groups of attributions? (2 marks)

1. *Luck;*
2. *Effort;*

3. Task difficulty;
4. Ability.

(c) What do you understand by the term *learned helplessness* and what strategies may a coach use to prevent this from happening? (3 marks)

1. *Learned helplessness . idea that failure is inevitable/examples;*
 2. *Possibly leading to idea of giving up even when success is possible/examples;*
 3. *Coach to enable player to achieve success/play weaker opposition/examples;*
 4. *Encourage view that success due to stable/internal factors . ability/examples;*
 5. *That failure due to unstable/external factors . effort or luck/examples.*
 6. *Learned helplessness can be global and/or specific.*
- (Do not credit just give up) Max 3 marks

(i) Using **Figure 5**, describe the different types of *attribution* that may be used by athletes. (4 marks)

1. (Ability/ internal and unstable) . *how good a performer you are and attributions such as .I.m not very good at tennis., or .our team had too strong a middle for them.;*
 2. (Effort/internal/unstable) . *how much commitment put into performance and statements such as .we were psyched-up to go all-out for that game., or .I tried as hard as I possibly could.;*
 3. (Task difficulty/external and stable) . *attributions concerning the opponents, such as .they were the league leaders. and attributions to the task itself, e.g., .the moves we tried were just too complicated..*
 4. (Luck/external and unstable) . *chance, random events and environmental factors, e.g. .we got all the breaks., or .they had the ref on their side..*
- 4 marks

(ii) In terms of attribution theory, explain what is meant by *self-serving bias*. (2 marks)

1. *Self-serving bias . attributing successful outcomes to themselves/internally/ suitable e.g.;*
2. *And attribution unsuccessful outcomes to others/externally/suitable e.g.;*
3. *Tendency/bias to want to protect own self-esteem;*
4. *Feel better if winning is down to your own efforts/losing outside your control;*
5. *Coach and performer might attribute performance differently. 2 marks*

(iii) People who fail in sport may at some time experience *learned helplessness*.

Explain what this means. (3 marks)

1. *Learned helplessness . strong reaction to failure/leading to given up/avoidance behaviour;*
2. *Even if success is possible;*
3. *Caused by attributing failure to ability/internal factors;*
4. *Ability is stable/unchanging;*
5. *Therefore failure becomes predicted for the future/inevitable;*
6. *Can be global or specific*

Explain the 19th century codes of amateurism and professionalism, and their positive impact on 19th century and modern day sport. (14 marks)

Amateurism

- Taking part in sport for the love of it/no monetary gain
- Participation/process more important than winning
- C. Encourages socially acceptable behaviour e.g. morals / abide by rules of sport/fair play/sportsmanship
- D. Discourages deviant behaviour e.g.cheating/match fixing etc
- E. Because not attempted by extrinsic rewards
- F. 19th century – amateur middle or upper class /amateurs revered the ‘all-rounder’
- G. Today can still be financially supported e.g. sponsorship / SportsAid

H. Freedom from restrictions of professionals contracts/not seen a commodity/no contractual obligations
 I. (Amateurism) inclusive / not always based on ability / less pressure/can perform at all levels/experience lots of sports/ can perform at grass roots to elite level
 J. 'open' championships – amateurs can still compete against professionals – just not win the money e.g. golf
 K. Eligibility codes protect amateurs from competing against professionals
 L. Olympic Games – biggest competition in the world maintained exclusive amateurism for over a century / still have the oath – keeping moral focus in the Games
 M. Amateur sport can act as a platform for professional sport e.g. boxing, golf etc
 Professionalism
 N. (Professionalism)–earning money from sport/broken time payments
 O. 19th century sport became a business/amateur paid for professionals/upper class were patrons
 P. 19th century from the working class
 Q. Train full time
 R. So standards improve
 S. As winning is critical/win ethic
 T. Encourages spectator sport / better spectacle for spectators
 U. 19th century occupied the masses / social control
 V. Olympic Games–do now accept some professional performers e.g. basketball
 W. Today all social classes can participate in either amateur or professional
 X. Ethics/moral codes still evident in amateur and professional sports today
 Y. NGB's formed
 Z. Today injection of money / commercialisation – TV rights etc allows NGB's to invest in grass roots / economic benefit to country/sport benefits/country benefits
 AA. Today amateur and professional codes blurred due to shared characteristics/difficult to distinguish between amateur and professional

What is the role and purpose of national Institutes of Sport?

designed to foster the talents of Britain's elite athletes/medal count
 B. Sports science/sports medicine/support applied physiology/ biomechanics/medical consultation/ medical screening/nutritional advice/performance analysis/psychology/podiatry/strength and conditioning/ sports massage/sports vision / technology/research and innovation
 C. Work in multi-disciplinary team to develop athletes/support coaches and Performance Directors
 D. The Performance Lifestyle programmes/career and education advice/ACE
 E. Olympic&Paralympic sports/some non-Olympic sports eg Premier League football
 F. Address issues of under-represented groups / some community focus
 G. Work with: [need at least 1 example] NGB/sport partners / UK Sport/Sport England or equivalent named organisation

Discuss the continued relevance of the contract to compete for elite performers in today's society (4)

Still relevant

A. (on field of play) without rules sport would be dysfunctional/ officials are there to enforce the rules / sport is a contest based on operating within a rule structure e.g. punish professional foul
 B. fair play is an important concept/still have Fair Play awards/ respect for opponents still encouraged e.g. shake hands / Olympic Ideal
 C. if people don't try hard enough there is no satisfaction/elite athletes are publicly funded so should always try their hardest /role models are expected to uphold standards
 D. (of field of play) methods in place to ensure rules enforced/performers receive bans to ensure others can compete and show skill e.g. for doping/violent play/compulsory drug tests/biological passport or equiv.

Not relevant

E. athletes should try to win at any cost/Lombardian ethic/ winning has become more important / a lot at stake/ gamesmanship
 F. concept belongs to a past age/ middle class concept from 19th century/ athletes should only have to abide by written rules / different cultures have different interpretations – different values
 G. athlete schedules are physically and mentally punishing – can't always give 100% / enter weaker team due to more important fixture in the future

H. more performers taking drugs/display violence/disrespect officials/more deviancy

Explain the impact of each of the following social and cultural factors on the development and spread of rational recreation during the 19th century:

- urbanisation
- public provision
- communications

Regular/written rules numbers-boundaries/skill based/ spectator/tactical/ development of facilities/equipment/ began with middle classes/opposite of popular recreation or equiv.

Urbanisation

B. Lack of space = popular recreation/mob games/ old pastimes lost/ new ones developed /rational recreation

C. Need form asses to be occupied /more free time and money= stadiums built for spectator sport/increase in spectators/town parks

D. Factories developed/churches=teams/more teams led to regular competition

Public provision

E. Government Acts/Municipal Reform Act 1837/local authority provision = provision of parks and baths

F. provision of parks and baths/public facilities = to improve health and hygiene of working classes

G. middle class = approval and encouragement of certain sports/banned mob games/social control/morals or equiv.

Communications

H. Media/newspapers/printing press/steam press=raised awareness of sport / role models

I. Railways/transport/canals = transported teams / spectators / regional – national – international / seaside/countryside /

Romantic movement / spread around British Empire

J. Roads developing = helped activities such as cycling

Suggest reasons to support the argument for legalising drugs in sport today.

[4 marks]

A. Drugs can be masked/occur naturally in body/EPO/gene doping/found in common medication

B. Drugs easily available/impossible to illuminate use of drugs

C. Overall low rates testing/inaccurate results/cheats one step ahead of testers

D. (negative impact of poor testing) affects performers

reputation/careers/sponsorship deals or equiv.

E. Drugs if regulated are not so harmful/labs could be encouraged to produce safe performance enhancers

F. if everyone could take them it would become a level playing field

G. Limited resources could be better employed e.g. to detect harmful drugs/develop elite sport in other ways

H. Drugs are necessary to recover from the gruelling training

I. Other technological advantages aren't regulated against e.g. biomechanics/nutrition/oxygen tents or equiv.

J. Sports and countries have different rules

K. Individuals have the right to choose/it's their body

L. Spectators or supporters not disappointed by role models

Explain why an elite performer should consider the nature of a sponsor and their products

A. the performer is role models for others

B. sport performers therefore have a social duty to others/human rights/unethical manufacturing of goods

C. commercial support depends upon the image of the performer

D. linking to a product that does not reflect the nature of sport/healthy life styles/ e.g. links to tobacco companies or alcohol/junk food

E. may endanger future commercial support

F. bring criticism to the performer/bad reputation

- G. benefits one sponsor will bring compared to another e.g. level of income/publicity
- H. Level of control exerted by sponsor/commitment/expectation
- e.g. public appearance or equiv.

Discuss the suggestion that doping is necessary at elite level and outline the strategies sporting organisations use to limit the use of banned substances by performers.

[14 marks]

Agree

- A. Enhances physical/psychological attributes/increases chances of winning/better standards of performance/ perception to keep up with other athletes/balance playing field
- B. Train longer/recover quicker
- C. Other technological aids are used/doping can be viewed as another training aid
- D. If properly monitored not as great a health risk as people think
- E. People should be free to choose
- F. Institutionalised/encouraged use by coaches or equiv.
- G. Many banned substances are available legally/may be naturally occurring in the body eg some athletes will have higher testosterone than others
- H. Testing not always accurate/can't detect new substances

Disagree

- I. Health risks
- J. Unfair advantage/against 'contract to compete'/cheating/negative deviancy
- K. Not all performers have access to doping methods/ensures level playing field for all performers/some are successful without using drugs
- L. Consequences if caught eg shame/loss of earnings/poor image of sport
- M. Negative role models for children
- N. Encourages drug taking from early on/more athletes/perception 'if you don't take it, you won't make it'/peer pressure to take drugs

Strategies

- O. Random/out of season testing /no warning tests/ testing
- P. Reform/devise structured approach/strong anti-doping culture/clear guidelines on website/'100% ME' campaign
- Q. Better coordination between organisations/shared policies/policies eg WADA/World Anti-Doping code/NADO/UK Sport Ethics Department or equiv
- R. Education programmes for athletes/coaches
- S. Punishments/life bans/strip guilty athletes of medals
- T. More funding for testing programmes/improved technology for testing/testing centres
- U. Use of positive/negative role models/name and shame
- V. Funding/sponsorship received by athlete to be returned if found guilty/contracts contain clauses if caught doping
- W. Use of athlete biological passport
- X. Use of the media to portray an appropriate image/sports marketing experts

Identify five characteristics of a World Games

- A. Elite performers/international performers
- B. Pre-qualification required/selection process
- C. Multi-sport and single sport
- D. Amateur and professional
- E. Able bodied and disabled performers
- F. National showpiece/pride/political statement/shop window effect
- G. High level of commercialisation/sponsorship
- H. Cultural/social benefit/Olympic spirit/ideals/bringing people together
- I. Opening/Closing ceremonies
- J. High quality facilities
- K. Volunteers/Games Makers

L. Worldwide coverage/global media coverage/global audience/equiv

Suggest reasons why not all sports or groups of performers, such as women, will benefit from success at the Olympic Games.

- A. Not the same amount of media coverage for all sports/groups
- B. Fewer role models/high profile performers
- C. Lower status of sport/difficult to compete against traditional sports/more successful sports
- D. Different funding levels/less sponsorship/lack of Government funding
- E. Lack of access to clubs/facilities
- F. Sporting organisations unable to cope with demand
- G. Provision in schools/National Curriculum/extra-curricular activities/poor club-school links
- H. Cultural barriers/discrimination/stereotyping/sexism
- I. Lack of control/decision making by other groups

Explain how the middle classes supported the developments in sport during the 19th century. [3 marks]

- A. Development of rules/rational recreation/codification via public schools/universities/NGB
- B. Development of leagues/competitions via public schools/universities/ clubs/NGB/factory teams/church teams/teams
- C. Development of facilities/parks/public baths via philanthropists/factory owners/church/public schools/universities/government Acts
- D. Controlled sport via administration/clubs/NGB/leadership roles
- E. Development of morals/values/ethics via codes of amateurism/athleticism/muscular Christianity/Olympism/sportsmanship
- F. Provided more leisure time/Wednesday half day/Saturday half day/Bank Holiday allowed more spectators/time to participate/time to play
- G. Commercial sport/professional sport via agents/promoters/broken time payments/paid
- H. New sports via universities/manufacturing companies/Industrial Revolution/inventors
- I. Amateurism/Gentleman Amateur due to having time/money to play for the love of it

Discuss the suggestion that funding should be equal for all sports and not based on performance at major championships.

Agree

- A. All sports need funding for development/increase chance of success/ fair funding
- B. Helps to promote less familiar/popular sports
- C. Widens the foundation/participation pyramid/increase grass roots participation
- D. Provides alternative options for participation/everyone has the right to develop their potential in chosen sport
- E. London Olympic legacy should be encouraged

Disagree

- F. Limited funds have to be used effectively/not enough funding for all sports
- G. Better to increase chances of winning medals in target sports/tax payers need value for money/no compromise approach appears to be successful/reward successful sports
- H. Encourages sports to invest money correctly/accountability/ encourages sporting organisations to have high quality resources/good Whole Sport Plans/administrators or equiv
- I. Encourages sporting organisations/governing bodies to work together/ share resources
- J. Funding is a privilege not a right

Explain the reasons for companies investing such large sums of money in sport. 3 marks for 3 of: [3 marks]

- A. Raise awareness of brand/increased publicity/Increase sales of their products/brand becoming more fashionable
- B. Linked to sport with good image/improve company image/link to excellence/improve community involvement/improve public relations
- C. Opportunity for corporate hospitality/entertain clients
- D. Improve company morale/employees feel linked to success of sport
- E. Tax relief for sponsoring companies

Outline the disadvantages to a sport of increased media control. 4 marks for 4 of: [4 marks]

- A. Traditional nature of the sport changes/new competitions/formats introduced/rules/regulations/scoring systems altered/clothing/ uniforms changed/breaks in play
- B. Playing times altered/playing seasons altered
- C. Location of events may be influenced by commercial considerations
- D. Ticket allocations given to sponsors not fans
- E. More popular sports gain more coverage at expense of minority sports
- F. Media can direct public opinion/support about sport or event/over sensational negative events eg deviancy
- G. Fewer viewers for some sports due to pay-per-view/subscription channels
- H. Lower attendance at events that are televised
- I. Over-saturation on television/spectators become bored with too much sport

Explain the social factors and the support programmes in the UK that encourage the development of elite athletes and increase the chance of winning medals. (14 marks)

- A. Status of sport/level of media coverage
- B. Equal opportunities policies/anti-discrimination policies
- C. School/university experience
- D. Club network/access to clubs
- E. Parental/family/peer support
- F. Socio-economic status/social class
- G. (Funding) – private/scholarships/sponsorships or equiv/Sport Aid
- H. (Funding) – public/lottery/local authority or equiv.
- I. Sport England – coordinated development of grass roots/ participation
- J. UK Sport coordinates development of elite sport/provide support services
- K. Co-ordinated approach of sports organisations/work together (UK Sport, Sport England, NGBs, EIS, BOA, Sports Coach UK, UKSI)
- L. Whole Sport Plans
- M. High quality facilities
- N. High quality coaching
- O. Talent identification programmes/TIPs/examples of TIPs, eg Girls for Gold, Pitch to Podium
- P. Levels of structured competition
- Q. Progression routes/district to county to region or equiv/LTAD
- R. Research and development programmes
- S. Sports science/biomechanics/sports psychology/nutritional advice/ strength and conditioning
- T. Sports medicine/physiotherapy
- U. World Class Performance Pathway/Programme
- V. (explanation of WCPP) Talent – Development - Podium
- W. Talented Athlete Scholarship Scheme/TASS/Athlete Personal Awards
- X. Performance Lifestyle/ACE programme

What are the similarities between the sporting values of the 19th century English public schools and the modern Olympic Games?

Both encourage;

- A. Sportsmanship/respect for opponent/fairplay
- B. Athleticism/physical endeavour with moral integrity
- C. Follow unwritten rules of the sport/etiquette/code of conduct
- D. Taking part is more important rather than winning/team loyalty as well as individual success
- E. No monetary prizes/winning for the glory/amateurism
- F. Self-discipline/maximum effort/high commitment level
- G. Natural ability – no drugs

Explain how, during the 19th Century, ex-public school boys influenced the development of sport in the UK and around the world.

- A. Impact of universities/old boys network led to codification/rules and regulations/clubs
- B. Establishment of governing bodies led to regular competitions/leagues
- C. Industrialists/employers developed factory teams/facilities
- D. Clergy developed church clubs/teams/YMCA/Boys Brigade
- E. Officers used sport with Armed services/troops
- F. (Ex-public school boys) travelled the British Empire and introduced new sports
- G. Philanthropists/social reformers built facilities/encouraged social reform
- H. Teachers/blues and some impact implied, eg taught sport
- I. Politicians introduced Acts of Parliament for public provision of facilities

Suggest reasons why the International Olympic Committee (IOC) has allowed professional performers to compete at the Olympic Games in recent years. (3 marks)

- A. Many traditional amateur sports are now professional
- B. Blurring of amateur and professional status in many sports/difficult to make clear distinction between 'true' amateur and others
- C. Olympic Ideal maintained/correct sporting ethics
- D. No prize/appearance money awarded
- E. Amateurs can still compete
- F. Higher standard of competition
- G. Greater spectator/media interest
- H. High levels of income/media rights/ticket prices

Discuss the suggestion that the increased media coverage of elite sport has had a positive impact on coaches.

- A. Greater profile/public awareness of their role
- B. Increased salary/job opportunities
- C. Greater funding from media rights to develop players/team/squad/support systems
- D. Easier to analyse opposition
- E. Learn from other coaches
- Disagree
- F. Greater pressure/expected to produce results
- G. Greater expectation to deal with media/answer questions/invasion of privacy or equiv
- H. Hire and fire culture/easier to lose job
- I. Coaches at clubs/sports with less coverage have less funding
- J. Coaches at clubs/sports with less coverage find it harder to attract performers
- K. Media allows opposition access to team tactics

Explain the terms positive deviancy and negative deviancy. Use practical examples to support your answer. (3 marks)

- A. (Negative Deviancy) – Behaviour against societies norms and values/against sporting ethic/sub-normal behaviour
- B. Example – intentionally breaking the rules/fouling another player/ doping/violence/match fixing
- C. (Positive Deviancy) – Over conformity to sporting ethic
- D. Example – over training/competing with an injury/over commitment to win and unintentionally injures another player

Suggest reasons why there have been very few instances of spectator violence at the modern Olympic Games compared to some other major sporting events. (4 marks)

- A. Olympics only once every 4 years
- B. Crowds from many countries/less intense rivalry
- C. Fairplay/international understanding encouraged/Olympic ideal actively promoted
- D. Less media hype to incite crowd
- E. Family orientated
- F. Alcohol drinking culture not usual
- G. Less pre-arranged organised violence
- H. Behaviour of performers does not deliberately incite opposition supporters
- I. Multi-sport competition