**PHED 3 Revision Paper B**

**Question 1**

Weightlifting is a sport where the performer generates maximal strength contractions. Describe how muscles recruit muscle fibres to produce maximal force and describe how energy is provided for the repeated maximal contractions that occur during training for weightlifting. *(14 marks)*

1. *Uses motor units;*
2. *Motor unit = motor neurone and muscle fibres;*
3. *number of motor units used could be varied;*
4. *All or nothing law;*
5. *size of motor units could be varied;*
6. *spatial summation;*
7. *fast-twitch motor units produce more force/slow-twitch less force;*
8. *repeated nervous stimulation*
9. *without time to relax;*
10. *produces stronger contraction in motor unit;*
11. *wave summation;*
12. *Immediate energy/stored ATP/ATP-PC;*
13. *Anaerobic;*
14. *PC breakdown*
15. *to creatine and phosphate*
16. *Enzyme = creatine kinase*
17. *Energy released and used;*
18. *for ATP synthesis;*
19. *recovery - aerobic energy for;*
20. *PC resynthesis;*

**Question 2**

**Figure 1** shows the *oxygen consumption* (VO2) of a subject during a period of rest,

sub-maximal exercise and recovery.

(a) (i) State which letters (**A-E**) represent *oxygen deficit* **and** *EPOC*. *(1 mark)*

(ii) How long did the exercise last **and** what does letter **F** represent? *(2 marks)*

(b) EPOC consists of fast and slow components. What are the functions of the *slow* *component*, **and** how are these functions achieved? *(4 marks)*

(b) (i)

1. *deficit – B;*
2. *EPOC – C;* ***1 mark***

(ii)

1. *duration = 14 mins;*
2. *F = steady state/period when VO2 remained constant;* ***2 marks***

(c)

1. *slow – extra oxygen needed;*
2. *for removal/breakdown of lactate/buffering;*
3. *for supply to breathing muscles;*
4. *for supply to heart muscles;*
5. *normalise increase temperature that occurs;*
6. *lactate mainly converted back into pyruvate;*
7. *oxidised to CO2 and water;*
8. *produces ATP;*
9. *in inactive muscles other organs (liver).*
10. *some lactate converted to glucose/glycogen;*
11. *Cori cycle in liver;*
12. *some excreted in urine and sweat;* ***max of 4 marks***

## Question 3

(b) **Figure 3** shows the relationship between VO2 max of male games players and their percentage distribution of slow-twitch (type 1) muscle fibres.

(i) What do you understand by the term *VO2 max*? *(1 mark)*

(ii) Describe and explain the relationship between the VO2 max of the male games players and their percentage distribution of slow-twitch (type I) muscle fibres. *(5 marks)*

(b) (i)

1. *max oxygen consumed/uptake per minute;* ***1 mark***

(b) (ii)

1. *Increasing VO2 max with increasing % slow twitch fibres;*
2. *direct/linear relationship;*
3. *slow-twitch fibres better at producing energy/ATP aerobically;*
4. *less susceptible to fatigue;*
5. *better for long duration/slow energy/ATP provision;*
6. *more mitochondria;*
7. *more myoglobin;*
8. *more oxidative enzymes;*
9. *more capillaries;* ***max of 6 marks***

## Question 4

Athletes competing in the high jump will often fail to clear the bar in the early stages of a competition for different reasons, even though they go on to clear greater heights.

**Figure 5** shows a high jumper at take off.

(a) Use *Newton’s Three Laws of Motion* to explain how the high jumper takes off from

the ground. *(7 marks)*

(a)

1. *First Law – body remains in constant state of motion unless acted upon by a force;*
2. *high jumper applies muscular force to change state of motion from run up to take off;*
3. *Second Law – magnitude of force governs acceleration given at take off;*
4. *direction of force also governs direction of acceleration;*
5. *high jumper applies force at take off to achieve upwards/vertical acceleration/change of direction;*
6. *Third Law – to every force there is an equal and opposite reaction force;*
7. *Ground Reaction Force;*
8. *GRF needs to generate large vertical component for high jumping;*
9. *Muscular force or named muscle group;* ***max of 7 marks***

## Question 5

Team game players often look to their leader to assist their performance. Discuss the different ways that leaders develop and using appropriate theories discuss the idea that leaders need to be adaptable in their approach. *(14 marks)*

1. *Emergent – from within group/elected;*
2. *Prescribed – from outside group/imposed/selected;*
3. *Fiedler Interactionist model;*
4. *successful leadership dependent on interaction;*
5. *leaders characteristics/styles vary;*
6. *e.g. autocratic/democratic/laissez-faire;*
7. *best to adapt style to situation/group;*
8. *individuals vary in preferred style of leadership;*
9. *and in expectations of leadership role;*
10. *e.g. task orientated preferred in team sports;*
11. *e.g. person orientated preferred in individual sports;*
12. *situation varies in terms of demands it makes of leader;*
13. *task orientated preferred when quick decisions needed/short preparation time available;*
14. *Chelladurai’s multidimensional model;*
15. *Performers satisfaction and performance / outcomes of performance and situation*

*depend on interaction of three aspects of leaders behaviour;*

1. *Required behaviour is the expectations that the management has of the leader;*
2. *Actual behaviour is way leader goes about role in the specific situation;*
3. *Preferred behaviour is the way the athletes like their leader to relate to them;*
4. *Ideal team situation is when all three behaviours are congruent / match;*
5. *Leader acts in a way that both management and athletes like / leader achieves high*

*performance levels;*

1. *What leader does should be appropriate to situation and matches group’s*

*preferences;*

1. *Hence leader needs to adapt to demands of both the situation and the preferences of*

*the group to achieve desired outcomes;*

## Question 6

**Figure 6** shows the types of attributions that are common in sport.

(a) Using **Figure 6**, describe attribution theory and explain what is meant by *self-serving*

*bias*. *(4 marks)*

(b) People who fail in sport may at some time experience *learned helplessness*. Explain what this means. *(3 marks)*

(a)

1. *ability – 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 – how much commitment put into performance* *and statements such as "we were really psyched-up to go all-out for that game", or "I tried as hard as I possibly could";*
3. *task difficulty – 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 –* *chance, random events, and environmental factors, e.g., "we got all the breaks", or, "they had the ref. on their side";* ***1mark for all 4 correct***

1. *self-serving bias – attributing successful outcomes to themselves/internally/suitable e.g.;*
2. *and attributing 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. *Performer and coach may attribute differently;*

***max of 3 marks***

(b)

1. *Learned helplessness – strong reaction to failure;*
2. *leading to giving up 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;*
6. *Global or specific;* ***max of 3 marks***

## Question 7

Elite performers need to control both their psychological and physiological performance.

(a) (i) What are the similarities and differences between *aggressive* *behaviour* and

*assertive* *behaviour* in sport? *(2 marks)*

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

(a) (i)

|  |  |
| --- | --- |
| **Assertive behaviour** | **Aggressive behaviour** |
| 1. *Overt physical/verbal act* | *Overt physical/verbal act* |
| 1. *Within laws of game* | *outside laws of game* |
| 1. *no intent to harm/injure opponent* | *Intent to harm/injure opponent* |

***max of 2 marks***

(ii)

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’/role models /performer significant others;*
6. *imitation more likely if learner thinks behaviour will be reinforced;*
7. *or thinks it will not be punished;*
8. *e.g. - approved by team mates/coach/audience/behaviour goes unpunished;* ***max of 5 marks***

## Question 8

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)*

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

(a)

1. *elite score higher on vigour;*
2. *no difference/below on other scores;*
3. *iceberg profile;*
4. *presence of profile no guarantee of elite ability;* ***max of 3 marks***

(b)

|  |  |
| --- | --- |
| advantages ***max of 3 marks*** | disadvantages ***max of 3 marks*** |
| 1. *high researcher:respondent ratio/lots at a time/quick;* | 1. *weak validity;* |
| 1. *cheap/cost effective;* | 1. *tendency to give expected answer/lie;* |
| 1. *numerical/objective measures achieved;* | 1. *difficult to self-assess;* |
| 1. *reliable;* | *Ambiguity/ Misinterpretation of question* |

***max of 4 marks***

## Question 9

Some performers 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)*

(b)

1. *theory from Zajonc;*
2. *presence of audience causes increased arousal;*
3. *increased drive means performer tries harder;*
4. *effects depend on stage of learning;*
5. *early/cognitive stage – negative effects;*
6. *performer not fully developed appropriate response to demands;*
7. *later/associative/autonomous stages – performance enhanced by presence of audience;*
8. *if skill performance at a high level- enhancement;*
9. *enhancement effect more likely if simple task;*
10. *impairment effect more likely if complex task;*
11. *Negaitve effect enhanced if thought to be judged;*
12. *Evaluation apprehension;* ***max of 7 marks***