

Semester Two Examination 2016

Marking Key

PHYSICAL EDUCATION STUDIES UNIT 3

Student Name: _____

Teacher's Name: _____

Time allowed for this paper

Reading/planning time before commencing work:

Ten minutes

Working time for paper:

Two and a half hours

Material required/recommended for this paper

To be provided by the supervisor

This Question/Answer booklet

Multiple Choice answer sheet

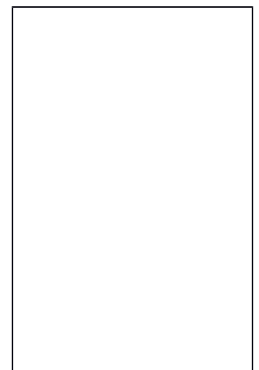
To be provided by the candidate

Standard items: Pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters.

Special items: **non-programmable calculator**

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.



Structure of this paper

Section	Number of questions available	Number of questions to be attempted	Suggested working time (minutes)	Marks available
Section One: Multiple-Choice	20	20	30	20
Section Two: Short Answer	8	8	70	50
Section Three: Extended Answer	4	2	50	30
			Total Marks	100

Instructions to candidates

- The rules for the conduct of this exam have been outlined. Sitting this examination implies that you agree to abide by these rules.
- Answer all questions according to the following instructions.

Section One: Answer **all** questions on the separate Multiple-choice Answer Sheet provided. For each question shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. If you make a mistake, place a cross through that square, do not erase or use correction fluid, and shade your new answer. Marks will not be deducted for incorrect answers. No mark will be given if more than one answer is completed for any reason.

Section Two and Three: Write answers to in this Question/Answer Booklet.

- You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.
- Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.
 - Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
 - Continuing an answer: if you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question(s) that you are continuing to answer at the top of the page.

Section One: Multiple Choice**(20 marks)**

This section has **20** questions. Answer **all** questions on the separate Multiple-choice Answer Sheet provided. For each question shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. If you make a mistake, place a cross through that square, do not erase or use correction fluid, and shade your new answer. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any reason.

Suggested working time: 30 minutes.

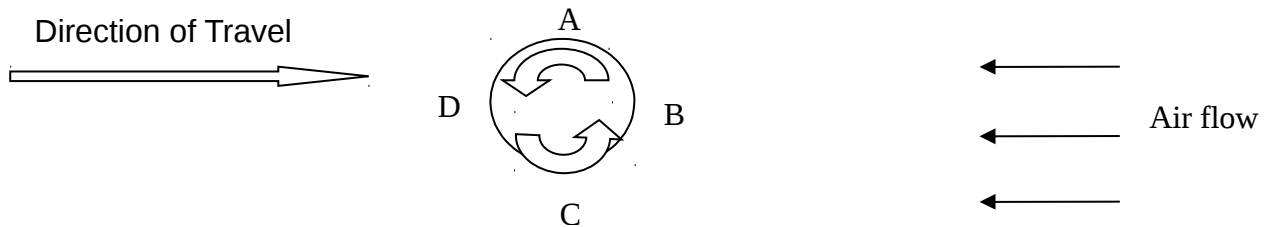
1. As the strength and conditioning coach of the local rugby team which of the following statements is least correct when planning for general preparatory (pre-season) phase.

- (a) The specific energy systems of players should be progressively overloaded during cardiorespiratory conditioning.
- (b) The intensity of training should increase in a 'step-like' fashion over training periods.
- (c) Specific muscle groups should be targeted during resistance training to condition muscles for game performance.
- (d) The volume of training should remain low to minimise athlete fatigue.**

2. Adam arrives at the athletics stadium 2 hours prior to his 200m event to begin his mental preparation. He knows that his arousal levels generally get very high prior to an event. Which of the following methods should he use to control these levels?

- (a) Perform some controlled breathing exercises prior to his regular warm up.**
- (b) Perform an extended warm up on the outside track to 'get rid of the nerves'.
- (c) Listen to some loud fast paced music.
- (d) Visualise himself winning the event in a record time.

3. The diagram below shows a spinning ball travelling through the air in the direction defined. Gravity will naturally bring the ball down to the ground, however in which direction will the spin of the ball force the ball to move?



- (a) Towards A
- (b) Towards B
- (c) Towards C
- (d) Towards D

4. Which of the following is not a concern when completing exercise in colder environments?

- (a) Frost bite
- (b) Dehydration
- (c) Cardiac Drift
- (d) Hypothermia

5. Sports drinks are recommended for athletes who undertake

- (a) Low intensity activity for over 1 hour
- (b) High Intensity activity for over 1 hour
- (c) Low intensity activity less than 1 hour
- (d) High intensity activity less than 1 hour

6. Which of the following is not part of the thin filament of the sarcomere?

- (a) Myosin
- (b) Actin
- (c) Z line
- (d) I band

7. A basketball guard weighing 50 kg, collides with a centre who weighs 70kg. Even though both players were prepared for the contact the centre was knocked over and fell to the floor. Why would this occur?

- (a) The centre was travelling faster than the guard.
- (b) The guard was travelling twice as fast as the centre.
- (c) Both players were travelling at the same speed.
- (d) The guard jumped into the air before contact.

8. Which of the following is the best example of using impulse to safely decrease momentum?

- (a) Pushing off the vault in gymnastics with straight arms.
- (b) Transferring your weight onto the front foot in a baseball swing.
- (c) Bending the elbows during the set technique in volleyball.
- (d) Stepping into a front kick in karate.

9. The trampolining at the Olympics in Brazil this year demonstrated how athletes can display amazing control over their body while flying high into the air. The athletes learn to alter which biomechanical factors when in the air to maximize angular momentum?

- (a) Angular velocity & Moment of inertia
- (b) Moment of inertia & Vertical velocity
- (c) Angular momentum & Angular velocity
- (d) Moment of inertia & Angular momentum

10. Tapering for a peak physical performance involves

- (a) increasing the workload volume while decreasing the intensity of the training.
- (b) decreasing the workload volume while decreasing the intensity of the training.
- (c) decreasing the workload volume while maintaining or increasing the intensity of the training.
- (d) increasing the workload volume while maintaining or increasing the intensity of the training.

11. Compare two outfield fielders who are required to maximise the distance thrown into home plate. Providing all other biomechanical factors are equal, the taller player will:
- (a) throw the ball a shorter distance.
 - (b) throw the ball a longer distance.**
 - (c) throw the same distance.
 - (d) throw the ball flat.
12. The resistance exercise, the triceps pushdown, is an example of a
- (a) first class lever.**
 - (b) second class lever.
 - (c) third class lever.
 - (d) None of the above.
13. A wrestling coach is very concerned about his star athlete. The athlete worries for days prior to the bout, causing significant stress. After asking some friends the coach finds out that this also happens to the athlete in other areas of his life and not just wrestling. Which of the following strategies should the coach not introduce to assist in reducing the stress prior to the event?
- (a) Progressive muscle relaxation after training
 - (b) Meditation before bed each night
 - (c) Visualisation techniques of the athlete winning the gold medal**
 - (d) Goal setting focusing on the process rather than the result
14. To improve his stability just prior to contact a rugby forward with the ball should
- (a) Stand up and turn side onto the contact
 - (b) Run straight at the oncoming player, bend his knees and lean forward into the contact**
 - (c) Run straight at the oncoming player, stand up and lean forward into the contact
 - (d) Run straight at the oncoming player, get both feet parallel with each other and wait to be hit

15. An endurance athlete should select which list of foods for his carbohydrate load.
- (a) Fish, yoghurts, nuts, white bread
 - (b) Pasta, fruit juice, chocolates and ice cream
 - (c) Steak sandwich, green salad, soft drink, watermelon
 - (d) Wholemeal cereals, avocados, eggs, bananas**
16. When analysing a muscle performing an isotonic or concentric contraction (shortening), which of the following statements is true?
- (a) An increased force is created by an increased velocity of contraction.
 - (b) An Increased force is created by a decreased velocity of contraction.**
 - (c) A decreased force is created by decreasing the velocity of contraction.
 - (d) The force of contraction is independent of the velocity.
17. When Physical Education teachers introduce new skills, they explain and demonstrate the skill, normally reinforcing key teaching points. This teaching strategy is an example of which type of transfer of learning?
- (a) Skill to Skill
 - (b) Proactive Transfer
 - (c) Training to Competition
 - (d) Theory to Practice**
18. Coaches use video footage and observational checklists to assist athlete performance. These are examples of
- (a) Qualitative Analysis**
 - (b) Quantitative Analysis
 - (c) Subjective Analysis
 - (d) Motion Analysis

19. Different teams and varied situations are suited to particular styles of leadership. An autocratic style is best suited when:

- (a) the team is full of experienced older players.
- (b) the team cares more about social cohesion compared to task cohesion.
- (c) players skills must be improved to enact a difficult game plan.**
- (d) players have ideas about preparing better for games.

20. A young 18 yr. old female golfer is trying to improve her maximum distance on her drives. Her coach is really trying to maximise her follow through as one part of her training, why?

- (a) It will allow her to control the side spin on the ball.
- (b) It will show her if her technique has improved.
- (c) It will prevent the club head slowing down prior to contact.**
- (d) It will decrease the overall momentum of the club head just prior to contact.

End of Section One

End of Section One

Section Two: Short answer**(50 marks)**

This section has **eight (8)** questions. Answer **all** questions. Write your answers in the spaces provided in this Question/Answer Booklet. Wherever possible, confine your answers to the line spaces provided. Use a blue or black pen (**not** pencil) for this section.

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.


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- Continuing an answer: if you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question(s) that you are continuing to answer at the top of the page.

Suggested working time: 70 minutes.

Question 21.

(5 marks)

Controlling spin in table tennis is a vital skill for success. Using one example, explain how a player can use sidespin on the ball during play to deceive the opponent. Include a diagram to assist your response.

Description	Marks (5 total)
<ul style="list-style-type: none"> • Diagram – displays the flight path correctly – ball travelling straight then curves at the end of flight path. Birdseye view  <ul style="list-style-type: none"> • Sidespin will produce an external force on the ball, in this situation pulling the ball across – the Magnus Effect. • Ball will move from high pressure to low pressure must have force acting in correct direction. <p>Deception</p> <ul style="list-style-type: none"> • By producing this force that pulls the ball across the opponent will hopefully misread the flight path of the ball. • Misread flight path will create mistake or weaker shot by opponent, which can then lead to success on next shot. 	<p>1 mark for diagram</p> <p>1 mark – spin creates a force</p> <p>1 mark – direction of force</p> <p>2 marks for how the player uses this to their advantage</p>

Question 22.

(8 marks)

Both athletes below rely on strength and power for athletic performance, however, they have different energy requirements during their event.



Athlete A – Designated hitter in baseball



Athlete B – Heavyweight Boxer

a) Outline the daily nutritional requirements that each athlete would need to consider to maximise their athletic performance. (4 marks)

Description	Marks (4 total)
<p>Athlete A – fuelled by anaerobic systems.</p> <ul style="list-style-type: none"> • An even balance of Carbohydrates, Fats and Proteins is required. • A slightly higher intake of protein may be needed to assist in power training. • Water intake should be increased slightly due to a higher protein/CHO diet. 	<p>Max of 2 marks for Athlete A 1 mark for each statement</p>
<p>Athlete B – fuelled by aerobic systems.</p> <ul style="list-style-type: none"> • A slightly higher carbohydrate content in diet. • Greater focus on Low GI foods for sustained energy both during training and on the day of the event. • Protein to be used in recovery to assist with muscle repair. • Water intake should be very highly regulated to assist with higher CHO diet. 	<p>Max of 2 marks for Athlete B 1 mark for each statement</p>

- b) For each athlete, outline one nutritional supplement or dietary strategy they could use to enhance athletic performance during the training week.

(4 marks)

Description	Marks (4 total)
<p>Athlete A – fuelled by anaerobic systems.</p> <ul style="list-style-type: none"> • Protein supplements – (recovery) <ul style="list-style-type: none"> - Aid in recovery after activity for muscle repair and regeneration. Quicker recovery will mean better performance at next event. <p>OR</p> <ul style="list-style-type: none"> • Protein supplements – (strength) <ul style="list-style-type: none"> - Aid in muscle growth and function. Stronger and more powerful muscles produce stronger contractions increasing performance. <p>OR</p> <ul style="list-style-type: none"> • Creatine supplements (ATP-PC) <ul style="list-style-type: none"> - increases muscle stores of creatine to increase muscle power, improve recovery between maximal efforts. <p>Athlete B – fuelled by aerobic systems.</p> <ul style="list-style-type: none"> • Carbohydrate loading <ul style="list-style-type: none"> - increase glycogen stores in muscle before event. Delays fatigue during the event. <p>OR</p> <ul style="list-style-type: none"> • Sports drink <ul style="list-style-type: none"> - used during training as a glycogen sparing technique. Increase blood glucose to spare muscle glycogen which delays muscle fatigue. <p>OR</p> <ul style="list-style-type: none"> • Protein supplements – (recovery) <ul style="list-style-type: none"> - Aid in recovery after activity for muscle repair and regeneration. Quicker recovery will mean better performance at next event. <p>OR</p> <ul style="list-style-type: none"> • Protein supplements – (strength) <ul style="list-style-type: none"> - Aid in muscle growth and function. Stronger and more powerful muscles produce stronger contractions increasing performance. <p>*** No steroids as this is not a nutritional supplement, but a performance enhancer ***</p>	<p>Max of 2 marks for Athlete A 1 mark for identifying the strategy. 1 mark for explaining how it improves performance.</p> <p>Max of 2 marks for Athlete B 1 mark for identifying the strategy. 1 mark for explaining how it improves performance.</p>

Question 23

(6 marks)

A team of long distance runners met in Mexico for an altitude training camp before attending the Olympics this year. Explain three (3) physiological adaptations these athletes will obtain from this training camp and describe the benefit to performance.

Description	Marks (6 total)
<p>Physiological adaptations (Student can list any of the following with only the first three adaptations to be marked)</p> <ul style="list-style-type: none"> • Increased capillarisation <ul style="list-style-type: none"> - increased ability to supply oxygen/increased blood to the muscles. - greater oxygen supply increases aerobic performance. • Increased haemoglobin volume and concentration <ul style="list-style-type: none"> - increases amount of oxygen carried by the blood. - greater oxygen supply increases aerobic performance. • Increased red blood cell <ul style="list-style-type: none"> - more red blood cells to carry oxygen in blood. - greater oxygen supply increases aerobic performance. • Increased aerobic enzymes <ul style="list-style-type: none"> - allows use of oxygen to produce energy/ATP faster. - more efficient supply of ATP and muscular level increases aerobic performance. • Increased mitochondria <ul style="list-style-type: none"> - allow higher intensity aerobic respiration. - work at a higher intensity, for similar energy expenditure. 	<p>Max of 2 marks for each adaptation.</p> <p>1 mark for identifying adaptation</p> <p>1 mark for explanation of adaptation</p>

Question 24

(5 Marks)

A friend has asked you to assist them in teaching the “lay-up” skill to their under 14 basketball team. You use the following training steps.

Step 1 – Shooting the ball at the basket

- teach players how to release the ball at the backboard – arm position, aiming at the target etc.

Step 2 – 2 steps without dribbling, no shooting the ball

- teach players to take 2 steps without dribbling, jump up and touch backboard with shooting hand.

Step 3 – Add steps 1 and 2 together

- teach players to take 2 steps without dribbling, jump up and shoot the ball with correct arm action.

Step 4 – Add dribbling the ball then 2 steps and shoot the ball

- teach players to dribble the ball then smoothly move into their 2 steps before shooting the ball at the basket.

a) Name and describe the coaching activity you have outlined in the above 4 steps.

(3 marks)

Description	Marks (3 total)
Chaining <ul style="list-style-type: none"> • Breaking the skill into smaller parts then teaching them in the sequential order so that players are successful at each stage. • Each part of the smaller activities looks like that part of the final skill, learning the exact technique. 	1 mark 1 mark 1 mark

b) The above steps outline a simple coaching activity. Once the players have mastered the lay-up, the coach would need to increase the complexity of the activity. Identify two (2) ways the coach could make the skill more like a competition situation.

(2 marks)

Description	Marks (2 total)
Increasing the complexity of the drill <ul style="list-style-type: none"> • Introduce a defensive player • Introduce time pressure (make 5 lay-ups in 30sec) • Introduce skill requirements (make 5 lay-ups in a row) • Vary positions of completing skills (make a lay-up from 3 different spots) 	1 mark for each of the ways. Max of 2 marks

Question 25

(8 marks)

You have been selected as the new Under 12 Netball Coach for the local club. You have 9 girls in the team of which 5 played last season for other teams. The other 4 girls have never played before. The girls come from 4 different schools so they do not know each other very well. The club has a skill development focus so winning is not the main objective. Using the four factors of Carron's model of group cohesion explain one element for each factor that you would need to consider to make sure the girls form a cohesive unit this season.

Description	Marks (8 total)
<p>Environmental Factors</p> <ul style="list-style-type: none"> • Size of group – small so cohesion should be manageable. • Number of different schools – makes it harder as girls don't spend extra time with each other. <p>Personal Factors</p> <ul style="list-style-type: none"> • Player's motivation to play – if they all want have the same motivation cohesion is easier. • Personal focus on skill improvement – directs goals to a central theme, increasing cohesion. • Different previous experiences (playing vs. not playing) will require attention to bring players together and have same expectations. <p>Leadership Factors</p> <ul style="list-style-type: none"> • Leadership style used by coach – suit the player's needs. • Types of behaviours expected by players will enhance group cohesion – values that promote teamwork. • The ability of the coach to connect to the players on an individual level will make players feel part of the team. <p>Team Factors</p> <ul style="list-style-type: none"> • Being a team sport cohesion must be a priority. • Have players and parents understand the skills focus so that all expectations are consistent. • Equally distributed roles and responsibilities in games so players understand it is about a team and not the individual. • Due to the new players stability is negatively influenced so need 	<p>2 marks for each factor – only mark first element identified</p> <p>1 mark for identifying element 1 mark for explanation.</p>

to get players to know one another.	
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Question 26

(4 marks)

Explain why researchers in shoe companies would consider the principle of Coefficient of Restitution an important aspect of running shoe design in relation to cushioning the athlete's foot during activity.

Description	Marks (4 total)
<p>Define Coefficient of Restitution</p> <ul style="list-style-type: none"> • When two objects collide how much kinetic energy is transferred between the two objects. <p>Or</p> <ul style="list-style-type: none"> • The ability of an object to return to its original shape after a collision with another object. 	<p>1 mark for definition</p>
<p>Link to running when the foot strikes the ground the impact between the ground and foot is significant – the shoe design will have an impact on this.</p>	<p>1 mark for link to running</p>
<p>Link to shoe</p> <ul style="list-style-type: none"> • The gel/air used for cushioning the impact improves the elasticity of shoe, decreasing impact force – this will hopefully decrease risk of injury in joints. • The ability of the shoe to return to its original shape after the initial impact through improved elasticity will help propel the runner forward on the push off phase. 	<p>2 marks for linking to shoes</p>

Question 27

(6 marks)

Explain how a road cyclist can maximise his performance during a hill section using the following biomechanical principles.

a) Increase the torque

(3 marks)

Description	Marks (3 total)
<p>Torque – is the perpendicular force applied to the pedal to turn the rear wheel.</p> <p>Increase torque</p> <ul style="list-style-type: none"> • Increase the force at the horizontal phase in pedal turn, greater force at pedal, greater torque produced. • Short term this is done by creating greater muscular contraction by standing up and pushing down harder at the time of pedalling. • Long term adaptation is to develop greater leg strength to create stronger leg contraction. 	<p>1 mark for definition</p> <p>2 marks for increasing torque 1 mark for force 1 mark for how</p>

b) Increase the cadence or revolutions per minute (force-time application)

(3 marks)

Description	Marks (3 total)
<p>Cadence/Revolutions or Pedal rate – by increasing the rate the force is applied the momentum of the bike should increase.</p> <p>Increase time</p> <ul style="list-style-type: none"> • Increasing the number or revolutions while still exerting the same force, should increase momentum of bike, to get up hill quicker. • Short term this is done by pedalling faster over the period of time needed e.g. moving from 60 RPM to 70RPM means 10 more revolutions. • Long term adaptation is to develop greater endurance to sustain higher revolutions for extended periods of time. 	<p>1 mark for definition</p> <p>2 marks for increasing pedal rate 1 mark for rate 1 mark for how</p>

Question 28

(8 marks)

The performance of elite rowers is dependent on the efficient muscle contraction at the microscopic level within the sarcomere.

- a) Explain how the sliding filament theory works within the muscle to contract the sarcomere. Use diagrams to assist you in your answer. (5 marks)

Description	Marks (5 total)
<p>Students to identify the basic 4 steps of Sliding Filament theory (teacher to use judgement on slight adaptations)</p> <ol style="list-style-type: none"> 1. Calcium released from junction, triggering binding site 2. Calcium initiates cross bridges of myosin to find ATP 3. Cross bridges of myosin pull on actin molecule – sliding action 4. ADP + P released from cross bridges disengage ready to relax sarcomere 	<p>Max of 4 marks 1 mark for each step</p>
Diagram which assists answer	1 mark

- a) Identify which of the three muscle fibre types rowers would most likely engage during a competition race over 1000m to maximise performance. Justify your answer.

(3 marks)

Description	Marks (3 total)
Identifying Type IIa.	1 mark
<p>Justification</p> <ul style="list-style-type: none"> • Rowers need to produce strong, rapid contractions over repeated efforts – Type II fibres better suited to this. • Competition time will have the rower work at high intensity but for a duration that would include some oxidation and fibres which are highly resistant to fatigue – Type IIa. 	<p>1 mark for force of contraction 1 mark for duration of contraction</p>

End of Section Two

Section Three: Extended answers**(30 marks)**

This section contains four (4) questions. You must answer two (2) questions. Write your answer in the spaces provided.

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or additional space if required to continue an answer.

- Planning: if you use the spare pages for planning, indicate this clearly at the top of the page.
- Continuing an answer: If you need to use the space to continue an answer, indicate in the original space where the answer is continued, i.e. give the page number. Fill in the number of the question that you are continuing to answer at the top of the page.

Suggested working time: 50 minutes.

Question 29**(15 Marks)**

Phil recently entered his first Bodybuilding competition. He was disappointed with his 22nd place. He hires you as his professional sports science advisor.

- a) Phil is looking at using some performance enhancers to improve his results. Outline two (2) performance enhancers Phil could use and describe the physiological changes brought on by these substances. Identify both positive and negative changes.

(6 marks)

Description	Marks (6 total)
<p>Identify any two of the following (only mark first two)</p> <ul style="list-style-type: none"> • Anabolic Steroids <ul style="list-style-type: none"> - Increase the performer's muscle size and strength through the facilitation of muscle growth and resynthesis, and the improved rate of tissue repair. - Benefit in body building – increased muscle size and strength. - Side effects – acne, liver damage, aggression, infertility. • Protein Supplements <ul style="list-style-type: none"> - Increase the performer's size and strength through the facilitation of muscle development and the improved rate of tissue repair. - Benefit in in body building – increased muscle size. - Side effects – liver damage. • Stimulants (amphetamines, pseudoephedrine) <ul style="list-style-type: none"> - Increases awareness, aggression and masks fatigue, improving anaerobic performance. - benefit in body building – increase work output. 	<p>3 marks for each enhancer 1 mark for use of enhancer 1 mark for positive physiological change 1 mark for negative physiological changes</p>

- side effects – anxiety, restlessness, insomnia etc.	
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- b) Phil reads an article highlighting that during a concentric muscular contraction the muscle force produced and contraction speed are inversely proportional. Using a specific resistance training exercise, such as the bench press, explain what this means to Phil's training and how he will maximise his force production.

(6 marks)

Description	Marks (6 total)
Identify this as the force-velocity relationship	1 mark
Identify that as velocity of the contraction increases in a movement then the muscular force produced will decrease.	1 mark
Therefore to maximise force production velocity should be as minimal as possible during the movement.	1 mark
Resistance example	(3 marks for example)
- Recognised resistance exercise.	1 mark
- Goal is to have slow velocity throughout the range of motion in the exercise.	1 mark
- Resistance should be as high as possible to work slowly through sticking point of exercise - maximising the force produced.	1 mark

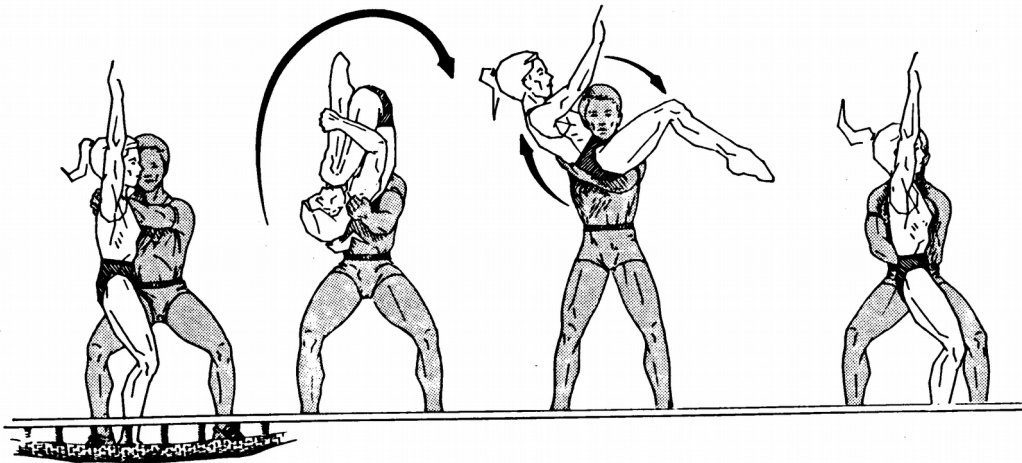
- c) Phil also seeks some advice on using goal setting to motivate him to achieve an improved result at the next competition. Suggest three (3) ways goal setting could help his performance.

(3 marks)

Description	Marks (3 total)
Identify any three of the following (only mark first three)	
• Provides a target for him to aspire to, which keeps his motivation high.	1 mark for each. Max of 3 marks.
• Provides a way for him to monitor his progress and displays his training progressions.	
• Provides him with a direction in his training to be efficient and purposeful.	
• Provides motivation when he achieves performances along the way in his training or competitions.	
• Provides time frames to achieve targets to keep him focused	

Question 30

(15 Marks)



Position

A

B

C

D

The above diagram shows a junior gymnast, Peta, working with her coach to improve her technique on her front somersault. Peta is preparing for her first competition in just over a month's time.

- a) Once Peta leaves the ground at position A her angular momentum will remain constant. Discuss how she manipulates her angular velocity and moment of inertia at positions A, B and C to successfully complete the somersault.

(9 marks)

Description	Marks (9 total)
<p>Position A (take off)</p> <ul style="list-style-type: none"> Maximise angular momentum just prior to take off so somersault has highest possible energy. Maximum moment of inertia by increasing lever length by putting hands above head. Minimum angular velocity to gain more control on take off and get body into correct position. 	<p>3 marks for each position 1 mark for impact on somersault 1 mark moment of inertia 1 mark angular velocity</p>
<p>Position B (tuck)</p> <ul style="list-style-type: none"> Using angular momentum to complete body rotation as fast and as early as possible in somersault. Minimum moment of inertia by decreasing lever length by tucking head and legs into body to decrease resistance. Maximum angular velocity to get body through full rotation, less control though. 	
<p>Position C (half tuck/pike)</p> <ul style="list-style-type: none"> Regulating body rotation/position to make sure landing is successful Increasing moment of inertia by increasing lever length by untucking head and legs to increase resistance. 	

<ul style="list-style-type: none"> Decreasing angular velocity to slow body rotation, and gain more control for landing. 	
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- b) In landing at Position D, Peta's body is exposed to a high level of impact force. What technical adjustment could she make to maximise the principle of impulse in reducing this landing force?

(3 marks)

Description	Marks (3 total)
Impulse definition = Change of momentum or Impulse = Force x Time - Body in flight (angular momentum) to landing (linear momentum)	1 mark for definition
Technical adjustment – knee and hip bend - bending at the hips and knees at the moment of impact. - the landing force is spread across a greater time period.	1 mark technical adjustment
By increasing the time spent during landing, the landing force is dispersed for longer, reducing the impact on Peta's body.	1 mark how this impacts impulse

- c) Outline how Peta could use video evidence as a method of reflection to improve her landing technique.

(3 marks)

Description	Marks (3 total)
Students should identify the following about video analysis <ul style="list-style-type: none"> Set up camera <ul style="list-style-type: none"> appropriate positioning video quality – action speed Watching the video <ul style="list-style-type: none"> skill execution - checklist slow motion mode available (freeze frame) Athlete/Coach contribution <ul style="list-style-type: none"> athlete feedback during performance – how did it feel coach observations Identify reason for errors <ul style="list-style-type: none"> physical skill, physical fatigue, mental skills 	3 marks 1 mark for each points, must be explained though (max of 3 points)

Question 31**(15 Marks)**

Janine has competed in ocean swimming competitions with average distances between 2km and 3 km, for the past 5 years. She has decided to take on a new challenge and compete in triathlons. She wants to start at the Olympic distance of a 1.5km swim, 40km cycle and a 10km run.

- a) Janine competes for 30-40 mins in the ocean swims. The triathlon will last over 2 hours. This is a significant change in energy requirements during the event. Outline the nutritional changes Janine will need to consider for before, during and after the triathlon event to maximize her performance and recovery.

(9 marks)

Description	Marks (9 total)
Before event <ul style="list-style-type: none"> • Goal – carbohydrate loading technique - maximise glycogen stores in muscle and blood • High CHO meal (Low GI) 2-4 hours prior to event • High GI food 5-15min prior to event • Low fat and fibre content in pre event meal • Hydration – water (500ml in the hour prior to event) 	3 marks for before - 1 mark for each point which doesn't repeat itself
During the event <ul style="list-style-type: none"> • Goal – Glycogen sparing technique - minimise the depletion of glycogen stores in muscle and blood • High GI food approx. 30-50g per hour in the form of lollies, glucose gels, fruit • Sports drinks – hydrate and replace glycogen (room temperature, 4-6% concentration) • Hydration – water (200ml every 15mins) 	3 marks for during - 1 mark for each point which doesn't repeat itself
Post event <ul style="list-style-type: none"> • Goal – replenish glycogen stores in muscle and blood • High GI food in first 30mins after exercise in the form of lollies, glucose gels, fruit • Low GI food at 1-2 hrs after event • Sports drinks – hydrate and replenish glycogen (4-6% at room temperature) • Hydration – water to return to body weight or until urine is clear 	3 marks for post - 1 mark for each point which doesn't repeat itself

- b) Janine will experience a positive transfer of learning between the ocean swimming and the swim leg of the triathlon. Explain what this means and include specific examples to support your answer.

(3 marks)

Description	Marks (3 total)
<p>Positive transfer of learning definition</p> <ul style="list-style-type: none"> The learning experienced in one situation is helpful in the learning in another situation. 	1 mark for definition
<p>Explanation (must discuss two points from this list)</p> <ul style="list-style-type: none"> The skill is like for like – both competitions will use the freestyle stroke under same race conditions. Environmental conditions will be similar – ocean water racing is in open water and most triathlon swims are held in open waters of rivers, beaches or lakes. Energy systems will be very similar as distance of swims are closely aligned so body and muscles should be conditioned for event. Race conditions will be the same – the contact and jostling for position during the swim will be the same in both events. 	2 marks for explanation 1 mark for each similarity identified and explained

- c) Drafting, a technique where drag is minimised to increase performance, is allowed in ocean swimming. Explain how Janine could use this same technique in the cycling discipline of the race and identify what type of drag this is.

(3 marks)

Description	Marks (3 total)
<p>Form/Profile Drag – reducing the impact of the drag by reducing the oncoming pressure of fluid – slip streaming.</p>	1 mark for type of drag
<p>In cycling this is done by riding behind the cyclist in front of you to minimise the impact of the oncoming air resistance. By decreasing the air resistance the cyclist can work at a reduced energy cost for the same velocity/output. This decreased energy cost means you are delaying fatigue and increasing efficiency of energy expenditure during the race.</p>	2 marks for explanation 1 mark for each discussion point explained
<p>Students could also discuss pressure differences created high pressure at front low pressure at back, second cyclist rides in low pressure area – this would lend itself more towards Wave drag.</p>	

Question 32**(15 Marks)**

You are the professional coach at your Golf Club. James is a young amateur at your club and seeks your advice. He feels his follow through in his swing has changed and this is affecting his accuracy in getting the ball on the green when using his irons. James is a highly self motivated player, with a tremendous work ethic.

- a) You decide to use the Knudsen-Morrison model of qualitative analysis to help James. In preparation for observing James swing for the first time you select one of your skills checklist and have identified what areas in the follow through you should watch closely. Explain how you would implement the next three steps in this model.

(6 marks)

Description	Marks (6 total)
<p>The next three steps are (no marks allocated for naming)</p> <ul style="list-style-type: none"> • Observation, Evaluation, Intervention 	<p>2 marks for explanation of each step</p>
<p>Observation</p> <ul style="list-style-type: none"> • How will you obtain data for James to use? – visual data using video or just technical data using checklists. • Video – consider angle of camera, speed of video taken, playback options. • Checklists – have multiple copies for use, need a 2nd or 3rd observer to complete checklist for thorough review. 	<p>1 mark for obtaining data 1 mark for explaining how data is collected</p>
<p>Evaluation</p> <ul style="list-style-type: none"> • How do you use the data collected – identifying errors? - conversation with the athlete, show them the video checklist. • Video – get James to watch video and share thoughts, identify technique problems. • Checklists – show data analysis then talk with James and identify how he felt during the swing. 	<p>1 mark for use of data/identifying errors 1 mark for explaining how data is used/errors corrected</p>
<p>Intervention</p> <ul style="list-style-type: none"> • How will we correct the technical problem? – plan of attack • Drills to refocus technical aspects of the follow through. • Key technical points during swing that provide feedback e.g. elbow to ear which means get through full follow through. 	<p>1 mark for plan of attack 1 mark for explaining feedback and drills</p>

- b) In working with James you feel a democratic style of leadership will be most effective. Outline three (3) reasons for this choice.

(3 marks)

Description	Marks (3 total)
<p>Identify any of the following reasons (only mark the first three outlined in answer)</p> <ul style="list-style-type: none"> • 1 on 1 working relationship is better suited to a democratic style of leadership. • James approached you for assistance therefore he wants your advice and expertise. • James is highly motivated therefore no need to provide extra extrinsic sources of motivation. • James has a great work ethics therefore no need to bring in ruthless training techniques. • James will be required to do extra work without your supervision so he needs to take on his own responsible approach to these areas. 	<p>1 mark for each reason. Max of 3 reasons only</p>

- c) In reviewing his technique you are worried that James' range of motion is poor due to him overtraining. Describe two (2) recovery techniques you would recommend to get James back to his physical best.

(6 marks)

Description	Marks (6 total)
<p>Students are to identify only two recovery methods (only mark the first two methods).</p> <p>Stretching post training</p> <ul style="list-style-type: none"> • A post exercise stretching routine to be established. • Increase range of movement around joints by returning muscles to pre exercise length. • Remove waste products from muscles after training routine. • Physiologically soft tissue returns to pre training conditions, recovered for next training session. <p>Massage</p> <ul style="list-style-type: none"> • Increase blood flow into muscles post workout • Remove waste products from muscles. • Decrease stress in muscles from training exercises. • Physiologically soft tissue returns to pre training conditions, recovered for next training session. <p>Water Therapy – either of the methods below, but can only use 1.</p> <p>Hydrotherapy</p> <ul style="list-style-type: none"> • A stretching program in warm water • Increases range of motion in joints while stretching muscles. • Physiologically soft tissue returns to pre training conditions, recovered for next training session. 	<p>3 marks for each recovery method</p>

<p>Ice Baths/ Cold water</p> <ul style="list-style-type: none">• Shocks nervous system and enables stronger constrictions of blood vessels.• Assists in removing of wastes from blood.• Provides physiological and psychological return after training. <p>Progressive Muscle Relaxation</p> <ul style="list-style-type: none">• A post exercise stretching routine to be established.• Remove waste products from muscles after training routine.• Provides opportunity to use relaxation and visualisation techniques needed training for competition.• Physiologically soft tissue returns to pre training conditions and relaxation occurs through breathing exercises, recovered for next training session.	
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End of Section 3

ACKNOWLEDGEMENTS

Question 22

Image of baseball player batting

<http://www.freeimages.com/photo/derby-1-1492302>

Question 22

Image of Heavyweight Boxer

<http://www.freeimages.com/photo/sakis-1439944>

Question 26

Image of Jogger

<http://www.freeimages.com/photo/jogging-1430802>

Question 29

Image of body builder

<http://www.freeimages.com/photo/body-building-1246043>

Question 30

Image of somersault

<http://trampoline-usa.com/wp-content/uploads/2011/10/Front-image18.bmp>