



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2010

SPORT AND EXERCISE SCIENCE: PAPER II

MARKING GUIDELINES

Time: 2 hours

150 marks

These marking guidelines were used as the basis for the official IEB marking session. They were prepared for use by examiners and sub-examiners, all of whom were required to attend a rigorous standardisation meeting to ensure that the guidelines were consistently and fairly interpreted and applied in the marking of candidates' scripts.

At standardisation meetings, decisions are taken regarding the allocation of marks in the interests of fairness to all candidates in the context of an entirely summative assessment.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines, and different interpretations of the application thereof. Hence, the specific mark allocations have been omitted.

QUESTION 1 MULTIPLE CHOICE

1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10
B	C	C	B	D	C	E	C	A	E

[10]**QUESTION 2**

The process of motor development takes time and is the process of learning how to use muscles in the body to move.

Fundamental motor skills such as hopping, jumping, skipping, kicking, throwing, catching and striking are prerequisites to the learning of sport specific skills such as those of basketball, football, gymnastics, tennis, badminton, etc. Sport specific skills are comprised of fundamental skills and variations of them. It is very difficult to obtain proficiency in sport skills unless the fundamental skills are present.

Motor development happens in a predictable sequence of events for most children, but each child varies in age when each skill is mastered. Most children develop from head to toe. Secondly, children develop their motor skills from the centre of their bodies outward, near to far or proximal-distal. Lastly, the general to specific development pattern is the progression from the entire use of the body to the use of specific body parts.

(7)

- 2.2 2.2.1 Exercise 1 – neck sprain
 Exercise 2 – back strain; neck
 Exercise 3 – back strain

(3)

- 2.2.2 Exercise 1 – drop head forward and back. Then from side to side.
 Exercise 2 – bend the legs. Hands by ears.
 Exercise 3 – put hands under the small of the back. Bend the legs slightly.

(3)

- 2.2.3 Their muscles will get stronger.
 It will improve appearance and can decrease the frequency of injury, pain and disability.
 You can improve your posture through exercise that tones supporting muscles.

(2)

[15]

QUESTION 3**3.1**

3.1.1 It is the point in an object where all its mass is concentrated, the point at which the force of gravity acts on a body. It is where the weight is said to be concentrated. The position of the centre is important for balance. The centre of gravity of an athlete is continually changing as the body position changes.

(3)

3.1.2 The lower the centre, the more likely it is to stay above the base; and the larger the base, the more stable the object. Short, round people are more stable. In any sport where keeping upright is important, a low centre is an advantage. The closer the line of gravity is to the centre of the base of support, the greater the probability of maintaining balance. The broader the base of support, the greater the probability of maintaining balance. The probability of maintaining balance is increased when the centre of gravity is lowered in relation to the base of support. e.g. wrestling. The wrestler lowers himself down on engagement to make it harder for stability to be lost.

(7)

[10]**QUESTION 4**

	4	3	2	1
Explanation and understanding of the concept 'balance'.	Accurate, concise and comprehensive understanding and explanation of the concept of balance.	Covers the most important elements in understanding and explaining the concept of balance.	Explanation lacking in detail yet shows some understanding of the concept balance.	Explanation of balance is vague and lacking in detail. Concept not properly understood.
Analysis of action.	Action broken down in great detail. Knowledge of action excellent. Comprehensive analysis.	Covers the most important elements when analysing the action.	Content knowledge and break down of the action is lacking.	Action not analysed.
Analysis of action related to 'balance'.	Accurate and comprehensive correlation between action and balance.	Correlation between action and balance covered.	Correlation between action and balance lacking.	Inadequate or no correlation.
Selection of action in the chosen sport.	Suitable choice.	Appropriate choice.	Incorrect choice but some effort made to link it.	No choice.
Links all aspects of the question together and adds extra detail.	Considered linking of all aspects of the question and additional detail over and above the demands of the question.	Some linking of all aspects of the question and some additional detail over and above the demands of the question.	Little evidence of linking.	No linking.

[20]

QUESTION 5

	6	4 – 5	2 – 3	1
Explanation and understanding of Sport Psychology.	Comprehensive, accurate and concise understanding and explanation of Sport Psychology.	Covers the most important elements in understanding and explaining Sport Psychology.	Explanation lacking in detail yet shows some understanding of the concept of Sport Psychology.	Concept not understood and lacking in detail.
Explanation and understanding of the concept 'Goal Setting'.	Comprehensive, accurate and concise understanding and explanation of Goal Setting.	Covers the most important elements in understanding and explaining Goal Setting.	Explanation lacking in detail yet shows some understanding of the concept of Goal Setting.	Concept not understood and lacking in detail.
Recommendations made on preparation techniques.	Accurate, comprehensive and practical recommendations made on techniques.	Recommendations made on preparation techniques cover the most important elements.	Recommendations made are lacking in detail yet show some understanding of preparation techniques.	Inadequate and inappropriate recommendation made.
Understanding of elite athlete mental pressure.	Insightful understanding of the mental pressures elite athletes endure.	Has shown understanding in most aspects of the mental pressures elite athletes endure.	Lacking in detail on understanding the mental pressures elite athletes endure.	Little understanding.
Content knowledge.	Complete and thorough knowledge and excellent application.	Covers the most important elements in knowledge and application.	Little evidence of knowledge and application.	Vague and insufficient knowledge and/or application.

(30)

5.2 Task Oriented

Positive – decisions are always made.

In extreme situations this is best; best with team sports.

Focuses on setting goals; get the task done.

Negative – dictatorial; make most of the decisions; bossy; show little interest in the individuals; make the group aggressive.

Person-oriented

Positive – democratic; value others' views.

Share decisions; best with individual sports; considerate.

Negative – decisions take longer to get made.

(5)

5.3**5.3.1 The type of injury sustained by each athlete.**

The conditions that the injury occurred in/how it happened.

The date of the injury/time of the season.

Time injured within the game, e.g. at start or at end.

What rehabilitation was carried out?

(5)

5.3.2 They can keep a history.

See if the athlete has recurring injuries that will indicate a weakness.

Help draw up next season's training program.

(3)

[43]

QUESTION 6**6.1 Momentum is moving inertia.**

In order to generate momentum, a force must be applied to the object, i.e. the ball. When we are trying to give an object linear momentum such as throwing, the amt of momentum we can give to an object is determined by the sum of all the forces generated by different body parts.

There are 5 basic guidelines for giving an object as much linear momentum as possible.

1 – using body segments. We should use as many body segments as possible when trying to give an object maximum momentum.

2 – stretch out – before we begin the sequence of movements, such as the throwing action, we should stretch muscles out to their optimal length.

3 – sequencing of body segments – generally, to give maximum momentum to an object in throwing, we move larger muscle groups first and the smaller muscle groups closer to the object last.

In effect we use the body like a giant whip.

4 – timing of body segments – to give maximum momentum to an object in throwing we need to make sure that the right body segment is adding to the overall momentum at the right time.

5 – full range of motion – to give maximum momentum to an object in throwing, we need to move the segments through the greatest range of motion as we possibly can.

The sequence and timing of body segments is legs, then the hips, followed by the trunk, then the shoulders, arms and finally the hands.

The extension of the arms and the delivery stride taken will be at optimum stretch allowing for optimum force. This also allows for the greatest range of motion and therefore the greatest force can be generated.

The large step taken at delivery increases the size of the base of support so that the player delivers the ball with their centre of gravity within the base of support.

To initiate rotation on an object, an eccentric force must be applied.

The greater the force given to the ball, the greater the speed of release.

	5	4	3	2	1
Explanation and understanding of 'Momentum'.	Comprehensive, accurate and precise understanding and explanation of momentum.	Covers the most important elements in understanding and explaining momentum.	Covers some of the important elements in understanding and explaining momentum.	Explanation lacking in detail yet shows some understanding of momentum.	Concept not properly understood.
Explanation on how Akhtar generates momentum.	Comprehensive, accurate and precise explanation on Akhtar's ability to generate momentum.	Covers the most important elements in explaining Akhtar's ability to generate momentum.	Covers some of the important elements in explaining Akhtar's ability to generate momentum.	Explanation lacking in detail yet shows some understanding on Akhtar's ability to generate momentum.	Concept not properly understood.
Content Knowledge	Comprehensive, insightful knowledge and application. Considered linking of all aspects of the question and additional detail over and above the demands of the question.	Covers the most important elements in knowledge and application.	Covers some of the important elements in knowledge and application.	Little evidence of knowledge and application.	Vague and insufficient knowledge and/or application.

- 6.2 The power and speed of the ball when released will be greatly decreased.
The ball will not be released accurately.

(2)

6.3 **Extrinsic**

Batter hitting the ball back onto the bowler where it connects on the bowler's body, e.g. the shin, fingers.

Losing balance after the ball is released and falling to the ground.

Ill-fitting shoes that damage the toes.

Intrinsic

Shoulder joint

Knee joint

Ankle

Lower back

Elbow

(7)

QUESTION 7

- 7.1 Arousal represents the intensity aspect of motivation. In other words, how prepared an athlete is to take part in an event.

The effects of arousal can be positive or negative.

Raising arousal level can also cause a state of 'readiness' to perform – this is largely a positive aspect and can enhance performance.

The physiological effects of arousal include an increase in heart rate, breathing and production of sweat.

High arousal can cause an athlete to worry and become anxious, which is a negative aspect if it is not controlled.

As a performer's arousal level increases (psyched up) the state of readiness and expectation increases,

but if the level of arousal gets too high a performer can lose concentration and feel over-aroused, which we may refer to as being 'stressed out'.

Too much arousal – anxiety, excessive stress – decrease in performance.

Low – little arousal, performance not raised.

According to this theory, as arousal level increases, so does the level of performance – but only to an optimum point.

Once past a point of moderate arousal level, performance decreases.

Participants in sport can become anxious if they are over-aroused and their performance usually suffers.

(10)

- 7.2 The coach would want to keep the shooter as calm as possible.

The physiological effects of arousal include an increase in heart rate, breathing and production of sweat. This would adversely affect the shooter as the increased heartbeat would make accuracy of shooting a problem, as would a sweaty hand!

If the level of arousal gets too high the shooter could lose concentration and feel over-aroused, which we may refer to as being 'stressed out'.

Too much arousal = anxiety, excessive stress = decrease in performance.

(4)

7.3 **Any of these:**

Rugby, contact sports like boxing, wrestling, karate, discus, shot put.

(2)

7.4 Task oriented:

Task-oriented athletes are focused on accomplishments like achieving a perfect service in tennis.

They want to win but not interested in showing their ability off in comparison to others.

Motivated by developing own technical standards.

More intrinsic.

Outcome oriented:

Outcome oriented athletes want to win and beat their opponent.

Enjoy the feelings they get from competing and

Comparing themselves with others, i.e. their egos get boosted.

They see failure as a result of their own limited ability.

(6)
[21]

QUESTION 8

8.1 A lever provides strength or improves range of movement. Levers are classified based on the relative positions of the fulcrum (joint), effort and resistance.

The longer the lever the greater the change in momentum, and consequently change in velocity, that can be imparted on an object. This can be an advantage in sports in which you hit objects, e.g. a hockey ball can be hit harder when the stick lengthens the lever arm further. To generate a much greater overall force the effects of several levers can be combined, as in a hockey hit where the trunk, upper arm, forearm and stick all work together.

(2)

8.2 The range would be greater but not necessarily more accurate.

(2)

8.3 The height of the player.
The strength/age of the player.

(2)

[6]

Total: 150 marks