
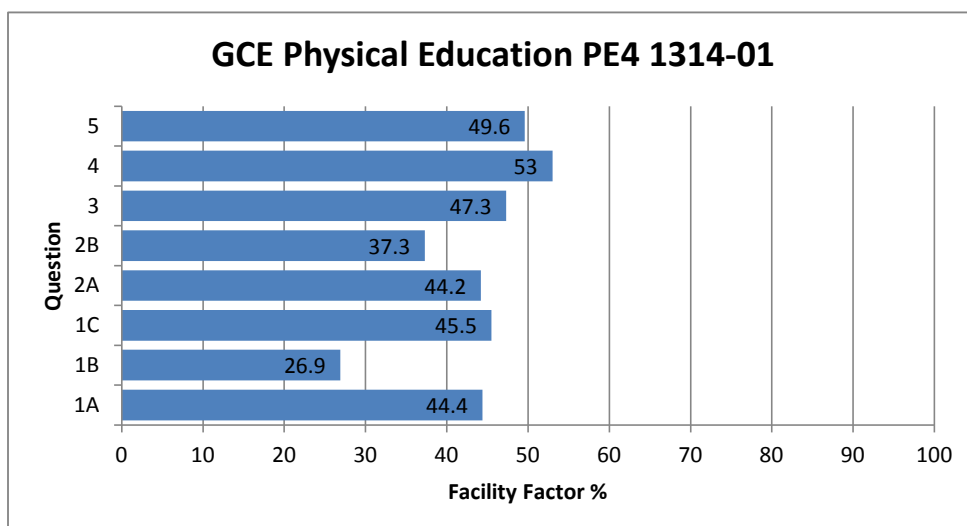


GCE Physical Education PE4 1314-01

All Candidates' performance across questions

						
Question Title	N	Mean	S D	Max Mark	FF	Attempt %
1A	459	1.3	0.7	3	44.4	100
1B	459	1.1	1.1	4	26.9	100
1C	459	1.4	0.7	3	45.5	100
2A	459	2.7	1.5	6	44.2	100
2B	459	1.5	1.1	4	37.3	100
3	459	4.7	1.8	10	47.3	100
4	378	10.6	3.7	20	53	82.3
5	81	9.9	3.4	20	49.6	17.6



SECTION A

*Answer **all** the questions in this section.*

1.

Figure 1 shows a diver performing a front somersault in the tuck position during a competition.



Figure 1

- (b) In terms of biomechanics, explain how a diver executes a front tucked somersault in order to ensure a perfect vertical entry into the pool. [4]

b) The diver would use the planes and axis of movement to ensure a vertical entrance. By using the transverse axis which passes from hip to hip, this will enable him to complete the front somersault. The frontal plane will enable him to jump off of the diving board, using Newton's law of ~~rest~~ reaction, and execute the dive perfectly. On making the perfect entry, drag will play a part in order to reduce splash etc. The more vertical the diver is, the ~~less~~ more water resistant he will be, and so when entering water will be able to pass him more easily, creating a perfect entry.

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b) In terms of biomechanics, the diver uses law 3 action/reaction on top of the board. Law 3 is when a force is exerted upon a second object (the board) causing it and the acceleration that takes place in the direction ~~that~~ in which the force acts. ~~The~~ The momentum of the board forces the performer up into the air. The diver executes a front tucked somersault changing the position of the centre of gravity by changing the centre of gravity to go through the head the performer, straightens out in order to achieve the perfect vertical entry into the pool.

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16 A diver executes a front tucked somersault, and can be explained through biomechanics by the use of planes and axis of rotation. The diver is in a position of a sagittal plane meaning he is able to spin (somersault) forwards and/or backwards. This sagittal plane will be paired with a sagittal axis which acts as a 'pole' going through the stomach and outside the back. This axis, like the plane, will allow the diver to rotate forwards and backwards. The sagittal plane will split the body into left and right sides, meaning he is only able to spin forwards, or backwards.

1b A diver executes a front tucked somersault, and can be explained through biomechanics by the use of planes and axis of rotation. The diver is in a position of a sagittal plane meaning he is able to spin (rotate) forwards and/or backwards. This sagittal plane will be paired with a sagittal axis which acts as a 'pole' going through the stomach and outside the back. This axis, like the plane, will allow the diver to rotate forwards and backwards. The sagittal plane will split the body into left and right sides, meaning he is only able to spin forwards, or backwards.

SECTION A

*Answer **all** the questions in this section.*

2.

- (b) Define the term *learned helplessness* and explain its link with self esteem and disaffection within physical activity. [4]

b)	<p>Learned helplessness is where the performer feels they have no control over the outcome of an event, and even if given the opportunity for to get out of the situation still do not take it because they feel failure is inevitable.</p> <p>learned helplessness reduces self-esteem significantly because when they feel that success is impossible, and failure is guaranteed, self-motivation decreases and so will performance as a result.</p> <p>learned helplessness will increase disaffection with the sport because when they think about the physical activity, they will associate failure with it. Also, when learned helplessness occurs, the enjoyment that it brings will disappear and so disaffection within the sporting activity occurs.</p>
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2

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Learned helplessness is the state of which an individual will fall into after numerous failures or losses. The individual will come to believe that failure is inevitable. Even if the opportunity arises to succeed, generally, an individual who suffers from learned helplessness will not take it. This will cause self-esteem and dissatisfaction within physical activity to decrease quite significantly. Therefore, participation is likely to decrease as the individual is not enjoying the sport, causing dissatisfaction. Self-esteem therefore needs to increase through the setting of goals in order to increase motivation and so to maintain participation within the sport.

2b

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②

2b) Learned helplessness is a predetermined ideal thought on a particular situation. Learned helplessness is linked with self esteem through a performers attribution to a prior failure. For example when a performer attributes a failure to ~~an~~ task difficulty the performer then feels the task is too hard and that he's not physically able ~~therefore~~ having a learned helplessness about the task and gaining low self esteem when competing in that task/sport again. In the same way learned helplessness links to disaffection in sport as the performer won't want to participate/compete again and will loose interest very quickly.

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SECTION B

*Answer **one** question only in this section.*

4. High level sports performers rely on extensive scientific and technological support in order to succeed at the very highest levels.

Discuss the role that technology plays in supporting the elite athlete before, during and after competition. [20]

4)

There is a concept that sport mirrors society and with technological developments occurring in general life, it is inevitable that this will be carried through to sport. This has affected the elite athlete in various ways on all aspects of sport.

Firstly, prior to competition new technological developments have supported elite athletes in the analysis of their opposition. ~~The~~ Prozone is a performance analysis programme used by many clubs in the Premier League, which allows coaches and performers to identify not only their weaknesses and strengths, but their opponents too. By using data derived from the Prozone, performers are able to come up with tactical aspects such as patterns of play that will be most effective on that particular opponent. This can lead to a greater self-confidence of the performer going into the game and so shows that technological aspects can support the athlete before dramatically, by improving their mental state.

Further technological developments into sports science has given new nutritional benefits prior to competition ~~the~~ such as carbo loading. Nutritional benefits like this allow athletes to perform better in competition due to the increased energy level that are achievable and so considerably help the athlete, especially in sports such as marathons.

These technological advances prior to competition could possibly lead to elite performers becoming over-reliant on technology and lowering their work rate themselves, because they feel that the technology will lead them to success. This raises the issue with technology supporting athletes of whether competition within sport is becoming an un-level playing field. This is particularly a problem in the F1, where it has become a battle of who has the best car, rather than who

is actually the best driver. For example, Lewis Hamilton in the 2013 Grand Prix season finished 6th overall on the table, however at the start of the 2014 Grand Prix season he won 4 consecutive races. This shows the reliance that is being put on the ~~car~~ equipment used to enhance performance displaying that sport may be becoming a battle of who has the best technology rather than a competition of ability.

During competition the technology support for elite athletes is vast. With the introduction of goal line technology and hawk-eye in tennis and cricket, performers can now be sure whether or not correct decisions have been made.

Also, with technology such as wind tunnels this has enabled a biomechanical aspect to improve performance during competition. Team GB cycling team use wind tunnels to identify the most aerodynamic positions of cycling, as well as the tight-fit cycling suits and aerodynamic helmets. This supports the elite performer by reducing their time without actually improving their ability, and so gives a competitive advantage over opponents. This technological advance in elite sport has also led to benefits for mass participation too however. With Team GB's success in the 2012 Olympics in cycling, this ~~has~~ increased role models such as Chris Hoy and Bradley Wiggins, influencing young people to get involved in cycling. Furthermore, participation levels increased dramatically and so the technology advances had not only an impact on elite performers within elite sport, but derived advantages on the health of the nation.

The technological advances may not in fact be that beneficial for elite sport however, in that the technology is very expensive and so is not accessible for everyone, in terms of between countries and between social classes. Countries in Africa which

are unable to afford the technology are very limited in their choice of sport because most sports are becoming heavily reliant on the technology. This means that Kenyans for example will not be able to take up cycling, even though they clearly have the endurance required to do so, because they cannot afford the necessary equipment to make it to elite level. A prime example of this is Mark Cavendish who was originally from Kenya, but moved to England and so made it as an elite cyclist because the necessary equipment is available. This therefore shows that technology will support performance during competition for some athletes, but as a sport as a whole elite competition may be negatively affected because the ~~best~~ ~~best~~ some of the potentially best athletes are not given the opportunity to excel.

After competition, technology has had many improvements such as ice baths. These enable speed of recovery, and there are also technological developments to help speed up recovery time from injury. With the introduction of such technology, this enables athletes to recover more quickly and so are able to train more before the following competition.

It could also be argued that the technological developments have ~~not~~ given reductions in deviance too. With replays, officials have been able to identify incidents that went unnoticed in the match and can furthermore be punished. Luis Suarez biting Ivanovic in 2013 was an incident in which technological developments allowed ~~for~~ punishment to be given to performers ~~after~~ after the match had finished, which resulted in a 8 game ban. This therefore shows that the technological advances may not support an elite athlete after the game/competition, but can help reduce negative parts of the game such as deviance.

A final technological advancement that has

supported elite athletes after competition is new supplementation. Supplements such as protein and creatine are being used far more regularly in order to speed up the recovery process once again, and so are beneficial to performers.

The performance analysis has also been improved for the elite athlete because improved video analysis has allowed objective information to be obtained. With applications such as 'coach's eye' on the iPad, ~~these~~ this information can be used to improve technique after competition, helping future performances.

To conclude, it is evident that technology does improve all aspects of an elite athlete's competition; before, during and after. However, it is vital that technology does not become the pure road for success, and the sport's individual organisations should regulate how far it can go, much like the swimming association did with the Speedo LZR suit, ~~to avoid the sport's main objective.~~

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L4/16