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Answers

Exam-style questions

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Check your answers to the questions and activity in this issue.

Covid and crowds (pp. 21–23)

1 When the results of professional sports matches are considered and the home team tend to be more successful than the away team (i.e. more matches are won when playing at the home ground).

2 Co-actors: those who are doing the sport at the same time, such as the jogger on the other side of the road when you are out for a run, or the cyclist on the same route.

Competitors: sometimes called competitive co-actor as they are in competition with the performer (e.g. swimmers in a race).

Social reinforcers: those that encourage the performer, such as the manager or coach.

3 Spectators facilitate performance by helping to bring out the dominant response in the performer.

An experienced or elite netballer will have learned this response and will be able to apply it correctly to the sporting situation in hand, perhaps choosing the correct court movement or passing from several potential options.

4 A coach

Exam focus: biomechanics of swimming (pp. 24–27)

1 One mark for any of the following:

Frontal cross-sectional area —improve technique, e.g. rolling the body with each stroke.

Shape and streamline — improve technique, e.g. raising the hips.

Surface characteristics — shaving or wearing a cap or swimwear.

2 Newton's first law, known as the *law of inertia*, states that an object's state of motion remains unchanged unless a net force acts on it. If a net force on a swimmer is zero, they will swim at a constant velocity when the thrust and drag forces are equal.

Newton's second law, known as the *law of acceleration*, describes the acceleration of an object as proportional to the force acting on it ($F = MA$) and inversely proportional to its mass. For example, a heavier swimmer will require more force to accelerate at the same time (or equivalent).

Newton's third law, known as the *law of reaction*, states that for every action there is an equal and opposite reaction. When diving off the blocks at the start of a race, a swimmer will apply a force to the

block through their feet, and the block will apply an equal reaction force to the swimmer in the opposite direction.

3 Speed = Distance / Time

$$\text{Speed} = 400\text{m} / 217.58\text{s}$$

$$\text{Speed} = 1.84\text{m/s}$$

Therefore 1 Speed = Distance / Time

$$\text{Speed} = 100\text{m} / 57.37\text{s}$$

$$\text{Speed} = 1.74\text{m/s}$$

$$\text{Angular velocity} = \text{Angular Displacement} / \text{Time}$$

$$\text{Angular velocity} = \pi \text{radians} / 2 \text{ seconds}$$

$$\text{Angular velocity} = 0.5\pi \text{radians/second}$$

Activity (p. 25)

1 Speed = Distance / Time

$$\text{Speed} = 100\text{m} / 57.37\text{s}$$

$$\text{Speed} = 1.74\text{m/s}$$

2 Angular velocity = Angular Displacement / Time

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