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Answers

Exam-style questions

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Check your answers to the questions in this issue.

Movement analysis and Olympic weightlifting (pp. 12–15)

1 Isometric contraction in which the muscle length does not change. For example, the triceps brachii maintaining elbow extension when holding a bar above the head in Olympic weightlifting.

Isotonic concentric in which the muscle length decreases. For example, the gluteus maximus extending the hip during the upwards phase of a squat.

Isotonic eccentric in which the muscle lengthens while contracting. For example, the gluteals controlling flexion during the downwards phase of a squat.

2 First law (inertia): an object remains in a uniform state of motion (at rest or uniform velocity) until acted upon by an external, unbalanced force. For example, the bar will remain stationary on the floor until the weightlifter applies a force greater than the weight of the bar.

Second law (acceleration): the acceleration of the bar will be proportional to the size and direction of the force. For example, the greater the vertical force applied to the bar by the weightlifter, the faster it will accelerate in an upwards direction.

Third law (reaction): for every action there is an equal and opposite reaction. For example, the weightlifter applies an upwards force to the bar and the bar applies an equal and opposite downwards force to the weightlifter.

3

Phase	Joint type	Articulating bones	Movement	Agonist	Type of contraction
Hip	Ball and socket	<i>Femur and pelvis</i>	<i>Flexion</i>	Gluteus maximus	<i>Eccentric</i>
Knee	<i>Hinge</i>	Femur and tibia	Flexion	<i>Rectus femoris</i>	<i>Eccentric</i>

Phase	Joint type	Articulating bones	Movement	Agonist	Type of contraction
Shoulder	Ball and socket	<i>Humerus and scapula</i>	<i>Flexion</i>	Deltoid	<i>Concentric</i>
Elbow	<i>Hinge</i>	Humerus, radius, ulna	Extension	<i>Triceps</i>	<i>Concentric</i>

Laboratory and field-testing methods and appropriate use of data (pp. 24–27)

1 Lactate sampling involves a blood sample to measure the amount of lactic acid present. Indirect calorimetry estimates energy expenditure by measuring the production of carbon dioxide in relation to the amount of oxygen consumed to measure aerobic power.

2 Data may be protected by limiting the number of people who have access to an individual's data file, double-password protecting the file and the computer, following the data protection policy within the business, using antivirus software, limiting sharing of documents, closing down monitors and ensuring others cannot see monitors when in use, checking data integrity, saving documents once and appropriately without sharing, and regular staff training and review to maintain compliance.

3 Qualitative data are subjective opinions, thoughts, feelings or descriptions, such as the impression a coach has of a football player's performance. Quantitative data involves objective, numerical information such as measurements. An example of quantitative data is the level achieved by a candidate completing the multi-stage fitness test.

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