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## Answers

# Exam-style questions

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Check your answers to the question in this issue.

## Preparation and recovery in elite sport (pp. 8–10)

**1** One mark for any of the following:

Use of free weights/resistance machines

Need to work at 50–75% of (one rep) max/1RM

Repetitions need to be higher than for power, e.g. 15–30 reps

More sets, e.g. 3–6

30–60 seconds rest between sets

Work:relief ratio of 1:1/1:2

**2** One mark for any of the following:

Muscle hypertrophy or increase in size/thickness of muscle fibres

Muscle hyperplasia or splitting/increase in number of muscle fibres

Increase in the speed/power/force of contraction

Increased strength of ligaments/tendons/connective tissue

Increase in ATP/PC/glycogen stores

Increased enzyme activity

Increased tolerance of lactic acid/buffering/delayed OBLA

Increased recruitment of motor units/muscle fibres

**3** One mark for any of the following:

AO1 = 2

Weight training is the use of resistance machines/free weights

Used to improve strength/anaerobic power/muscular endurance

AO2 = 2

With heavy weights a rugby player can increase power with a sporting example, e.g. tackle harder/kick the ball further/increase speed to run to get free from a defender

With lighter weights and high reps a rugby player can improve muscular endurance to last the duration of the game

AO3 = 2

Weight training is good to build power/muscular endurance/stamina.

However, care should be taken not to lift too heavy weights with low reps as the rugby player could become too big, which could reduce stamina and the ability to work consistently for the duration of the game

Becoming too big could cause a reduction in speed/become more injury prone

While weight training is important, it should be carried out in conjunction with other training methods, such as continuous/fartlek/interval/hiit/circuit training

## Exam focus: Altitude effects (pp. 18–21)

**1** Lower ppO<sub>2</sub> detected by the carotid body

Increased heart rate and cardiac output

Stroke volume decreases due to a reduction in plasma volume

Increased minute ventilation

**2** The decreased oxygen saturation of the blood stimulates the production erythropoietin (EPO) in the kidneys

EPO stimulates the production of additional red blood cells (erythropoiesis) in the bone marrow

Additional red blood cells increase the oxygen carrying capacity of the blood and offset reductions in VO<sub>2</sub> max

Additional adaptations include increases in aerobic enzymes, myoglobin, mitochondrial density and capillarisation

**3** Live high, train high:

Increased exposure to high altitude stimulates red blood cell production

Athletes often experience detraining as they are unable to work at the same intensity

Live high, train low:

Living at high altitude stimulates required adaptations

Training at low altitude means that training intensity is not compromised/detraining does not occur

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