Edexcel (A) Biology A-level

7.11 + 7.12 - Homeostasis and Exercise

Flashcards

What is homeostasis?

What is homeostasis?

The process of maintaining the internal environment in a state of dynamic equilibrium within narrow limits around an optimum.

Define negative feedback.

Define negative feedback.

Self-regulatory mechanisms return the internal environment to optimum when there is a fluctuation.

Define positive feedback.

Define positive feedback.

A fluctuation which triggers changes that result in an even greater deviation from the normal level.

Why is it important that core temperature remains stable?

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Maintain stable rate of enzyme-controlled reactions.

Temperature too low = enzyme & substrate molecules have insufficient kinetic energy.

Temperature too high = enzymes denature.

Why is homeostasis important during exercise?

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Maintains body in dynamic equilibrium.

How does the autonomic nervous system enable endotherms to thermoregulate?

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Via negative feedback. Thermoreceptors in the hypothalamus detect changes in blood temperature.

Hypothalamus sends impulses to effectors. May result in: vasodilation / vasoconstriction, sweating, piloerection, shivering, an increase in metabolic rate.

Explain the role of the skin in thermoregulation.

Explain the role of the skin in thermoregulation.

Vasodilation / vasoconstriction of arterioles supplying skin capillaries controls heat loss to skin surface.

Hair erector muscles contract & follicles protrude to trap air for insulation.

Evaporation of sweat cools skin surface.