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| START CARDIncreased activity |
| Leads to increased respiration in tissues |
| More carbon dioxide is produced |
| Blood pH is lowered |
| This is detected by chemoreceptors in carotid arteries |
| Impulses sent to medulla oblongata |
| Cardioacceleratory centre in medulla increases frequency of impulses |

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| Via sympathetic nervous system |
| To the sino atrial node |
| SA node increases heart rate |
| Increased blood flow removes carbon dioxide faster, blood carbon dioxide level returns to normal |

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| Rise in blood glucose concentration |
| Detected by beta cells in the islets of Langerhans |
| beta cells secrete insulin into the blood |
| Insulin detected by receptors on liver and muscle cells |
| Liver and muscle cells remove glucose from blood and convert glucose to glycogen |
| Glucose concentration falls back to normal level |
| Fall in blood glucose concentration |
| Detected by alpha cells in islets of Langerhans |
| Alpha cells secrete glucagon into the blood |
| Glucagon detected by receptors on liver cells |
| Liver cells convert glycogen to glucose and release glucose into the blood |
| Glucose concentration rises back to normal level |

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| START CARDDehydration |
| Decreased water potential of blood |
| Osmoreceptors in hypothalamus lose water (so shrink) |
| Increased ADH production by posterior pituitary gland |
| ADH carried in blood |
| To collecting duct |
| Collecting duct walls more permeable |

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| More water reabsorbed into blood  |
| Less urine produced, which is more concentrated |
| Blood water potential increases back to normal level |