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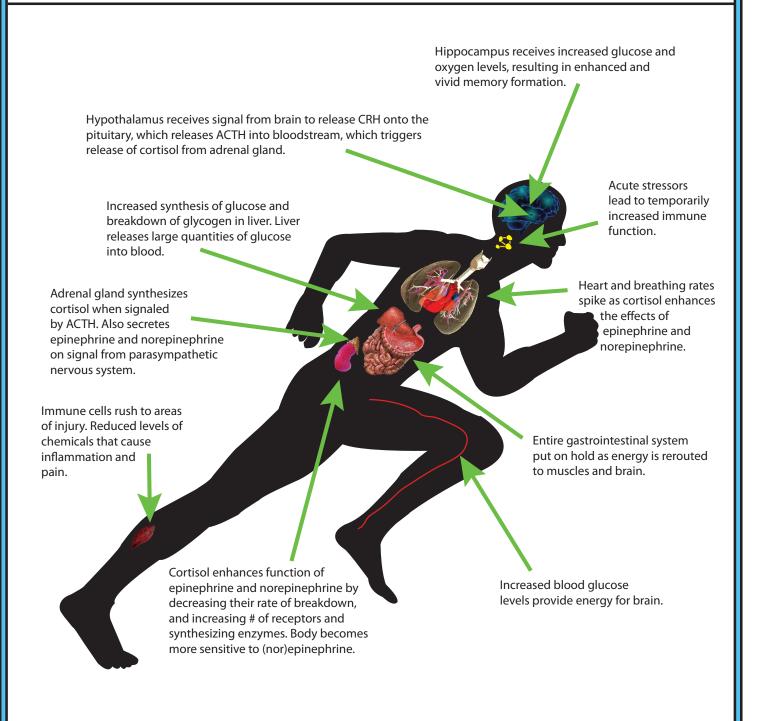
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The short-term effects of cortisol



~0-30 minutes In response to acute physical stressor, e.g. bungee jumping, car accident.

The long-term effects of cortisol

Cortisol inhibits glucose uptake into hippocampal neurons, increases intracellular calcium concentration, reduces levels of neurotrophins that keep cells healthy. These conditions can result in cell death. Can potentially lead to trouble creating new and accessing old memories, difficulty paying attention for extended periods of time, and shrinking of the hippocampus.

Amino acids, the building blocks of proteins, redirected to the liver for conversion into glucose.

> Damaged hippocampus is less effective at inhibiting glucocorticoid production, potentially resulting in chronically high cortisol levels.

Gastrointestinal system continues to be inhibited, manifesting as general loss of appetite*.

Increased fat breakdown to provide energy for body in form of ATP.

> Immune system inhibited to prevent development of autoimmune disorders; can result in low white blood cell count and atrophy of the lymph system (immune system). Ability to fight off illness is impaired.

Building of bone is inhibited as energy is redirected to more biologically crucial functions. Can lead to bone fragility and osteoporosis.

> Muscle weakening occurs as proteins in muscles are broken down into amino acids, and synthesis

of new proteins is inhibited.

Blood glucose levels return to normal or subnormal concentrations.

Synthesis of gonadotropin releasing hormone inhibited in hypothalamus, leading to reduced sex drive.

After ~30 minutes In response to chronic psychological/physical stressor (weeks to years).

Keep in mind that the studies supporting some of these conclusions are not definitive, particularly those concerning effects on the hippocampus. None of these effects have been shown to be irreversible, and many are still being subjected to heavy scrutiny and require further experimentation.

*One theory about so-called "stress eating" is that the brain is trying to activate the 'reward pathway' associated with pleasurable stimuli, i.e. CHOCOLATE.