



Stress: the classic culprit

Two types that we won't focus on here but are good for you to be aware of in case they show up in your life are physical and chemical stress. The causes of physical stress are things like falling over, injuring yourself from doing too much, lack of sleep or water. The causes of chemical stress are things like toxins, allergens, and pollutants. These two types of stress can make it more difficult to deal with things day-to-day so they are worth being aware of. For example, a person who suffers from hayfever would be under chemical stress at certain times of the year. Her body would be dealing with different things from normal and she may find routine things, like work, more challenging than normal.



The stress fast track

The stress response can take the fast track, neurological processes, or the slow track, chemical processes.

Step 1: This is the quickest step, the autonomic nervous system turns on in response to a stimuli. These stimuli can be real or it can be imagined. This is very important.

Step 2: The autonomic nervous system communicates information via the spinal cord and spinal nerves to the peripheral nerves. These are connected to the adrenal glands.

Step 3: The adrenal glands respond by producing adrenaline, which gets distributed through the bloodstream.

This fast track response takes place in seconds and produces a radical change in our circulating chemicals. Non-essential processes, like digestion, go on hold and blood fills the muscles so they are ready to respond. You also feel in a state of heightened awareness and energy – raring to go!



The stress slow track

Step 1: The stimuli – just like the fast track it can be an external thing or an internal thought, real or imagined.

Step 2: The brain activates diverse neural nets. These signals reach the brain area called the hypothalamus (The hypothalamus acts like a policeman at a very busy cross roads who is receiving information from his radio, other policemen he

can see, the cars coming up to him and some traffic lights. He has a whistle, a sign, his arms and a loud voice to communicate instructions).

Step 3: The hypothalamus takes the chemical signals and makes them into peptides (this is a chemical messenger that tells the body to switch something on)

Step 4: Hypothalamus makes *corticotrophin releasing hormone (CRH)*. This delivers a message to the pituitary gland.

Step 5: Pituitary gland makes the peptide *adrenocorticotropic hormone (ACTH)*.

Step 6: ACTH travels to the adrenal glands and instructs cells to make *glucocorticoids*.

Step 7: Glucocorticoids have effects on the body (immune, metabolic & cognitive effects). The most famous glucocorticoid is cortisol.

Overall this process can take minutes or hours to work.

Glucocorticoid's name is very descriptive. They have a role in regulating the metabolism of glucose, they are made in the adrenal cortex and have a steroidal structure (gluco & cort & oid). One of their effects is to reduce our immune response, which can render us more susceptible to infection when we are stressed. You'll remember the body is keen to return us to a state of balance as soon as possible. A major way glucocorticoids do this is to maintain normal levels of glucose in our system. It does this through a process called gluconeogenesis, which in essence means making new glucose. One of the ways that it makes new glucose is to break down fat stores and use these as the building blocks for new glucose. This is why some people report weight loss when stressed.

Cognitively glucocorticoids have a role to play too. A medium presence of them enhances the formation of memories that have emotional importance. Our memory of things not linked to the emotionally significant event however is decreased. There is also some evidence that a medium amount of glucocorticoids increases a person's vigilance and cognitive performance. Too much though and it takes a nosedive.