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Good stress, bad stress

Research identifies health impact of different responses

Most of us have come to think that stress is bad for us, but it is really part of our fundamental survival system. Stress can be harmful and dampen the immune response if it is chronic or ongoing. But short-term stress—the “fight-or-flight” response—may actually be beneficial, according to research by [Firdaus Dhabhar](#) ([Woman Drying Her Hair](#))



Firdaus
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(http://med.stanford.edu/profiles/Firdaus_Dhabhar/), PhD, associate professor of psychiatry and behavioral sciences and director of research at the [Stanford Center on Stress & Health](#) (<http://stresshealthcenter.stanford.edu/>).

Q: What are the different kinds of stress responses?

We define stress as a constellation of events that begins with a stimulus or challenge—a stressor—that is detected by the brain which activates the fight-or-flight systems in the body—the biological stress response. Acute or short-term stress results when the biological stress response is activated for minutes to hours.

Repeated short-term stress is experienced during most day-to-day living situations. Although we need to conduct more studies to better understand this, it appears that most reasonably healthy people can deal with repeated short-term stressors as long as there are sufficiently long periods when stress-related biological factors are at very low levels, such as when the person is at rest.

Chronic or long-term stress results when the biological stress response is activated for months to years. It can be due to one long-term stressor, like caring for someone who is chronically ill, or from numerous short-term stressors with insufficient time for a return to a resting state.

Q: Tell us how there might be benefits to stress.

The overwhelming focus of science and the media has been on the *bad* effects of stress because it is known that stress can have significant deleterious effects on health. In general, chronic or long-term stress can have harmful effects. In contrast, acute or short-term stress can have protective and beneficial effects. We have shown that when short-term stress is coupled with immune activation—for example during surgery or vaccination—the immune response is enhanced.

The beneficial effects of short-term stress make sense because the fight-or-flight stress response is nature's fundamental survival mechanism. Without this response a lion has no chance of catching a gazelle and eating to live another day. Without this same response the gazelle has no chance of escape. During a fight-or-flight response, organs like the skin and underlying tissue are likely to be damaged (a wound from an attack) by a stressor (a predator); enhancing immune function in these organs during times of stress would ensure better protection.

Our research aims to harness this natural stress response to boost protective immune function during surgery or wound healing, vaccination, infection and cancer. Benefits of short-term stress might also translate to better mental or physical performance, especially under conditions where chronic stress is low and the individual is trained or practiced in the task at hand.

Q: While acute stress may be beneficial in the right circumstances, what about chronic stress?

Chronic stress has been associated with increased biological aging, suppression or abnormal regulation of immune function, impairment of brain structure and function, increased susceptibility to some types of infection and worsening of conditions like depression, heart disease and some types of cancer.

However it is important to appreciate that Mother Nature has given all living beings, including humans, resilience mechanisms so we don't just keel over the minute we start experiencing chronic stress. In fact, psychological and biological resilience mechanisms enable us to keep functioning even when we are under chronic stress. The sad thing is that we can put ourselves under so much chronic stress that even the powerful resilience mechanisms that nature has given us can break down.

Interestingly, there are remarkable differences in stress resilience. Some individuals can continue to function normally or even well under significant amounts of chronic stress, while others are less able to do this. Another key area of research in our lab is to investigate the markers and mechanisms of resilience. Our long-term goal is to enable the development of interventions that would increase stress resilience, especially in individuals who find themselves in chronically stressful situations.

Q: How can stress impact the development and progression of cancer?

Chronic stress has been shown to accelerate cancer progression by inhibiting protective immune responses, enhancing harmful immune responses and increasing blood vessel growth factors and proteases (enzymes that break down proteins) that enable tumors to grow and metastasize.

Q: How might stress play a role in other medical conditions?

It appears that chronic stress can produce long-term increases in inflammation and oxidative damage, which may be ways that chronic stress can affect other medical conditions.

Q: What are some techniques for reducing chronic stress?

The key is to prevent long-term elevation or abnormal regulation of stress-related biological factors and to maximize the time spent in the resting state. From what we know so far, it's pretty much grandma's advice: Sleep well, eat and exercise in moderation, and engage in activities that help you feel relaxed and rested.

It is important to find what works for you and then to do it consistently. Consistency may be more important than intensity, so a brisk walk on a frequent and regular basis for

reasonable amounts of time may be more helpful than jogging as fast as you can once every few weeks. Genuine support from friends and family can also be an effective chronic stress buffer.

For more on Dhabhar's work on stress, go to talentsearch.ted.com/video/Firdaus-Dhabhar-The-positive-ef:TEDVancouver (<http://talentsearch.ted.com/video/Firdaus-Dhabhar-The-positive-ef:TEDVancouver>).