

# New study finds anticipating a laugh reduces our stress hormones

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In 2006 researchers investigating the interaction between the brain, behavior, and the immune system found that simply anticipating a mirthful laughter experience boosted health-protecting hormones. Now, two years later, the same researchers have found that the anticipation of a positive humorous laughter experience also reduces potentially detrimental stress hormones. According to Dr. Lee Berk, the study team's lead researcher of Loma Linda University, Loma Linda, CA, "Our findings lead us to believe that by seeking out positive experiences that make us laugh we can do a lot with our physiology to stay well."

In their earlier work the researchers found that the anticipation of "mirthful laughter" had surprising and significant effects. Two hormones – beta-endorphins (the family of chemicals that alleviates depression) and human growth hormone (HGH; which helps with immunity) – increased by 27 and 87 percent respectively when volunteers anticipated watching a humorous video. There was no such increase among the control group who did not anticipate watching the humor film.

Using a similar protocol, the current research found that the same anticipation of laughter also reduced the levels of three stress hormones. Cortisol (termed "the stress hormone"), epinephrine (also known as adrenaline) and dopac, a dopamine catabolite (brain chemical which helps produce epinephrine), were reduced 39, 70 and 38 percent, respectively (statistically significant compared to the control group). Chronically released high stress hormone levels can weaken the immune system.

The research is entitled Cortisol and Catecholamine Stress Hormone Decrease Is Associated with the Behavior of Perceptual Anticipation of Mirthful Laughter. It was conducted by Lee Berk with Stanley A. Tan, both of the Oak Crest Health Research Institute, Loma Linda, CA; and Dottie Berk, Loma Linda University Health Care, Loma Linda. Lee Berk is presenting the team's findings at the 121st Annual Meeting of the American Physiological Society, part of the Experimental Biology 2008 scientific conference.

Having found that the anticipation of a laughter event increased certain "beneficial" chemicals/hormones, they proposed that the anticipation of a laughter event might reduce stress hormones. To test their theory they studied 16 healthy fasting male volunteers for cortisol and catecholamine level changes. The participants were assigned to either the control group or the experiment group (those anticipating a humorous event).

Blood was drawn from both groups prior to the event (anticipation), four times during the event, and three times afterward (event and residual effect). Analysis showed that the blood levels in the anticipatory phase decreased for stress hormones cortisol, epinephrine and dopac in the experimental group. Trend analysis showed a progressive pattern of the decrease for the three hormones through the event.

As a result, the researchers suggest that anticipating a positive event can decrease stress hormones that can be detrimental when chronically released. These findings have implications to understanding the modalities that can benefit stress reduction in health and wellness programs.

Norman Cousins was a journalist and an editor of the Saturday Review. He was also a pioneer in the idea that beliefs, thoughts and emotions have biological effects ("biotranslation"). His view about the body's unrecognized ability to heal itself was captured in his 1979 book,

“Anatomy of an Illness (As Perceived by the Patient).”

Forty years ago, few scientists would likely have agreed with Cousins. Today, researchers like Berk are beginning to pinpoint exactly what thoughts can drive which affects. Researchers like Berk are finding that, in addition to what resides in our bodies, what resides in our brains and mind is important, too.

Source: American Physiological Society

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