

# Laughter remains good medicine

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The connection between the body, mind and spirit has been the subject of conventional scientific inquiry for some 20 years. The notion that psychosocial and societal considerations have a role in maintaining health and preventing disease became crystallized as a result of the experiences of a layman, Norman Cousins.

In the 1970s, Cousins, then a writer and magazine editor of the popular Saturday Review, was diagnosed with an autoimmune disease. He theorized that if stress could worsen his condition, as some evidence suggested at the time, then positive emotions could improve his health. As a result, he prescribed himself, with the approval of his doctor, a regimen of humorous videos and shows like Candid Camera.

Ultimately, the disease went into remission and Cousins wrote a paper that was published in the [New England Journal of Medicine](#) and a book about his experience, Anatomy of an Illness: A Patient's Perspective, which was published in 1979. The book became a best seller and led to the investigation of a new field, known then as whole-person care or integrative medicine and now, lifestyle medicine.

## Background

The unscientific foundation that was laid down by Cousins was taken up by many medical researchers including the academic medical researcher Dr. Lee Berk in the 1980s. In earlier work, Berk and his colleagues discovered that the anticipation of "mirthful laughter" had surprising and significant effects. Two hormones - beta-endorphins (the family of

chemicals that elevates mood state) and human growth hormone (HGH; which helps with optimizing immunity) - increased by 27% and 87 % respectively in study subjects who anticipated watching a humorous video. There was no such increase among the control group who did not anticipate watching the humorous film. In another study, they found that the same anticipation of mirthful laughter reduced the levels of three detrimental stress hormones. Cortisol (termed "the steroid stress hormone"), epinephrine (also known as adrenaline) and dopac, (the major catabolite of dopamine), were reduced 39, 70 and 38%, respectively (statistically significant compared to the control group). Chronically released high levels of these stress hormones can be detrimental to the immune system.

Lee Berk, DrPH, MPH, a preventive care specialist and psychoneuroimmunologist, of Loma Linda University, Loma Linda, CA, has paired with Stanley Tan, MD, PhD an endocrinologist and diabetes specialist at Oak Crest Health Research Institute, Loma Linda, CA, to examine the effect of "mirthful laughter" on individuals with diabetes. Diabetes is a metabolic syndrome characterized by the risk of heart attack, blindness and other neurological, immune and blood vessel complications. They found that mirthful laughter, as a preventive adjunct therapy in diabetes care, raised good cholesterol and lowered inflammation. The researchers will present their findings entitled Mirthful Laughter, As Adjunct Therapy in Diabetic Care, Increases HDL Cholesterol and Attenuates Inflammatory Cytokines and hs-CRP and Possible CVD Risk. They will present the findings at the 122nd Annual Meeting of the American Physiological Society (APS; [www.the-aps.org/press](http://www.the-aps.org/press)), which is part of the Experimental Biology 2009 scientific conference. The meeting will be held April 18-22, 2009 in New Orleans.

## The Study

A group of 20 high-risk diabetic patients with hypertension and

hyperlipidemia were divided into two groups: Group C (control) and Group L (laughter). Both groups were started on standard medications for diabetes (glipizide, TZD, metformin), hypertension (ACE inhibitor or ARB)) and hyperlipidemia (statins). The researchers followed both groups for 12 months, testing their blood for the [stress hormones](#) epinephrine and norepinephrine; HDL cholesterol; inflammatory cytokines TNF- $\alpha$  IFN- $\gamma$  and IL-6, which contribute to the acceleration of atherosclerosis and C-reactive proteins (hs-CRP), a marker of inflammation and cardiovascular disease. Group L viewed self-selected humor for 30 minutes in addition to the standard therapies described above.

## Results

The patients in the laughter group (Group L) had lower epinephrine and norepinephrine levels by the second month, suggesting lower stress levels. They had increased HDL (good) cholesterol. The laughter group also had lower levels of TNF- $\alpha$ , IFN- $\gamma$ , IL-6 and hs-CRP levels, indicating lower levels of inflammation.

At the end of one year, the research team saw significant improvement in Group L: HDL cholesterol had risen by 26 percent in Group L (laughter), and only 3 percent in the Group C (control). Harmful C-reactive proteins decreased 66 % in the laughter group vs. 26 percent for the control group.

## Conclusion

The study suggests that the addition of an adjunct therapeutic mirthful laughter Rx (a potential modulator of positive mood state) to standard diabetes care may lower stress and inflammatory response and increase "good" cholesterol levels. The authors conclude that mirthful laughter

may thus lower the risk of cardiovascular disease associated with diabetes mellitus and metabolic syndrome. Further studies need to be done to expand and elucidate these findings.

In describing himself as a "hardcore medical clinician and scientist," Dr. Berk says, "the best clinicians understand that there is an intrinsic physiological intervention brought about by positive emotions such as mirthful laughter, optimism and hope. Lifestyle choices have a significant impact on health and disease and these are choices which we and the patient exercise control relative to prevention and treatment."

Source: American Physiological Society ([news](#) : [web](#))

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