
Meditation, yoga might switch off stress genes

Study suggests explanation for these practices' health benefits

By Amanda Gardner, *HealthDay* Reporter

WEDNESDAY, July 2 (HealthDay News) -- Researchers say they've taken a significant stride forward in understanding how relaxation techniques such as meditation, prayer and yoga improve health: by changing patterns of gene activity that affect how the body responds to stress.

The changes were seen both in long-term practitioners and in newer recruits, the scientists said.

"It's not all in your head," said Dr. Herbert Benson, president emeritus of the Benson-Henry Institute for Mind/Body Medicine at Massachusetts General Hospital and an associate professor of medicine at Harvard Medical School. "What we have found is that when you evoke the relaxation response, the very genes that are turned on or off by stress are turned the other way. The mind can actively turn on and turn off genes. The mind is not separated from the body."

One outside expert agreed. "It's sort of like reverse thinking: If you can wreak havoc on yourself with lifestyle choices, for example, [in a way that] causes expression of latent genetic manifestations in the negative, then the reverse should hold true," said Dr. Gerry Leisman, director of the F.R. Carrick Institute for Clinical Ergonomics, Rehabilitation and Applied Neuroscience at Leeds Metropolitan University in the U.K.

"Biology is not entirely our destiny, so while there are things that give us risk factors, there's a lot of 'wiggle' in this," added Leisman, who is also a professor at the University of Haifa in Israel. "This paper is pointing that there is a technique that allows us to play with the wiggle."

Benson, a pioneer in the field of mind-body medicine, is co-senior author of the new study, which is published in the journal *PLoS One*.

Benson first described the relaxation response 35 years ago. Mind-body approaches that elicit the response include meditation, repetitive prayer, yoga, tai chi, breathing exercises, progressive muscle relaxation, biofeedback, guided imagery and Qi Gong.

"Previously, we had noted that there were scores of diseases that could be treated by eliciting the relaxation response -- everything from different kinds of pain, infertility, rheumatoid arthritis, insomnia," Benson said.

He believes that this study is the first comprehensive look at how mind states can affect gene expression. It also focuses on gene activity in healthy individuals.

Benson and his colleagues compared gene-expression patterns in 19 long-term practitioners, 19 healthy controls and 20 newcomers who underwent eight weeks of relaxation-response training.

More than 2,200 genes were activated differently in the long-time practitioners relative to the controls and 1,561 genes in the short-timers compared to the long-time practitioners. Some 433 of the differently activated genes were shared among short-term and long-term practitioners.

Further genetic analysis revealed changes in cellular metabolism, response to oxidative stress and other processes in both short- and long-term practitioners. All of these processes may contribute to cellular damage stemming from chronic stress.

Another expert had a mixed response to the findings. Robert Schwartz, director of the Texas A&M Health Science Center's Institute of Biosciences and Technology in Houston, noted that the study was relatively small. He also wished that there had been more data on the levels of stress hormones within the control group, for comparison purposes.

However, Schwartz called the study "unique and very exciting. It demonstrates that all these techniques of relaxation response have a biofeedback mechanism that alters gene expression."

He pointed out that the researchers looked at blood cells, which consist largely of immune cells. "You're getting the response most probably in the immune cell population," Schwartz said.

"We all are under stress and have many manifestations of that stress," Benson added. "To adequately protect ourselves against stress, we should use an approach and a technique that we believe evokes the relaxation response 20 minutes, once a day."

More information:

There's more on meditation at the [U.S. National Center for Complementary and Alternative Medicine](#).

SOURCES: Herbert Benson, M.D., president emeritus, Benson-Henry Institute for Mind/Body Medicine, Massachusetts General Hospital, and associate professor of medicine, Harvard Medical School, Cambridge, Mass.; Gerry Leisman, M.D., Ph.D., director, F.R. Carrick Institute for Clinical Ergonomics, Rehabilitation and Applied Neuroscience and professor, neuroscience, Leeds Metropolitan University, U.K. and professor, University of Haifa, Israel; Robert Schwartz, Ph.D., director, Texas A&M Health Science Center Institute of Biosciences and Technology, Houston; PLoS One



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