

Stressed Out? Stress Affects Both Body and Mind

Maybe it's money trouble or the burden of caring for a sick relative. Maybe it's your job. Maybe it's the traffic. Whatever the cause, everyone seems stressed out these days. People once hotly debated the idea that stress can affect your body, but we now know that stress can cause both short- and long-term changes to your body and mind. The more we understand how stress affects us, the more we learn about how to cope better.

Long before we humans learned how to drive cars to work and check in with the office on handheld computers, our bodies evolved to be finely attuned to a predator's attack. When we sense danger, our bodies quickly release **hormones** like adrenaline into our bloodstream that increase our heart rate, focus our attention and cause other changes to quickly prepare us for coming danger. Stress was—and still is—crucial to our survival.

The stress that we're adapted to deal with, however, is the short, intense kind—like running away before a bear can make a lunch of us.



Definitions

Cardiovascular

The system of heart and vessels that circulates blood throughout the body.

Hormones

Molecules sent through the bloodstream to signal another part of the body to grow or react a certain way.

Immune System

The system that protects your body from invading viruses, bacteria and other microscopic threats.

Modern life frequently gives us little time between periods of stress for our body to recuperate. This chronic stress eventually takes both a mental and physical toll.

It's long been known that blood pressure and cholesterol levels go up in people who are stressed. Studies have now linked chronic stress with **cardiovascular** problems like hypertension, coronary heart disease and stroke.

The **immune system** is also affected by stress. Dr. Esther M. Sternberg at NIH's National Institute of Mental Health says it makes sense for the immune system to gear up and get ready to heal potential wounds. But chronic stress can cause the system to backfire. Research has shown that wounds in people under chronic stress heal more slowly. Caregivers of people with Alzheimer's disease, who are often under great stress, are more likely to get the flu or a cold—and when they take vaccines to protect their loved ones from getting flu, their bodies don't respond as well.

Certain hormones that are released when you're stressed out, such as cortisol and catecholamines, have been tied to these long-term effects of stress. Sternberg says, "If you're pumping out a lot of cortisol and your immune cells are bathed in high levels of stress hormones, they're going to be tuned down."

Animal studies and brain imag-

ing studies in people have shown that chronic stress can have a similar effect on the brain. Dr. Bruce S. McEwen of Rockefeller University explains, "Hyperactivity of the stress response results in changes over time in the circuitry of the brain."

Brain cells bombarded by stress signals have little recovery time and eventually start to shrink and cut connections to other brain cells. The network that coordinates our thoughts, emotions and reactions thus starts to rearrange. Over time, entire regions of the brain can grow or shrink. That may explain why

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www.nimh.nih.gov/healthinformation/anxietymenu.cfm

www.nhlbi.nih.gov/health/public/sleep/healthy_sleep.htm

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studies have linked higher levels of stress hormones with lower memory, focus and problem-solving skills.

Not everyone deals with stress the same way, however, and why some people seem to cope better is a major area of research. McEwen says studies in animals show that early life experiences and the quality of maternal care affect how curious an animal is when it's older and how stressed it gets in a new environment.

Dr. Teresa Seeman of the University of California at Los Angeles School of Medicine points out that studies have also linked poverty and deprivation in childhood with how well people deal with stress. "There does appear to be a lingering impact," Seeman says, but adds that it's difficult to know the exact cause.

Two things that affect how much stress people feel are self-esteem and a sense of control. Workers who feel more in control at their jobs tend to feel less stress. People with low self-esteem produce more cortisol when they're asked to do something that's not easy for them, like speak in front of other people. They also don't become accustomed to the stress even after doing something several times and continue to produce high levels of cortisol.

It's not easy to change things like self-esteem and your sense of control at work, but there are things you can do to help you cope with the stresses of modern life.

"Sleep deprivation is a major issue," McEwen says. People who are stressed out tend to get less quality sleep. And sleep deprivation affects your ability to control your mood and make good decisions. It also throws the stress hormones in your body off balance.

"If you're sleep deprived," McEwen explains, "blood pressure and cortisol don't go down at night like they should." McEwen sees people who work night shifts as a window into what chronic stress does to the body over time. "They're more likely to become obese and to have diabetes, cardiovascular disease and depression," he says.

People who are stressed out tend to do other things that make their body less healthy and more vulnerable to the effects of stress. Many eat more fatty comfort foods, which can lead to obesity and diabetes. They may smoke or drink more, raising the risk for cancer and other diseases. And they often feel they're just too busy to exercise.

Seeman says, "Being physically active helps keep the body's systems



Wise Choices Ways of Reducing Stress

- Get enough sleep.
- Exercise and control your diet.
- Build a social support network.
- Create peaceful times in your day.
- Try different relaxation methods until you find one that works for you.
- Don't smoke.
- Don't drink too much or abuse any other substances.

in better shape and thus better able to deal with any demands from other stressful conditions."

Another factor affecting how we deal with stress is the isolation of modern life. Sometimes it seems like the only time we interact with our family or co-workers is when we're having a conflict. Seeman says it's important to develop a network of people you can go to and talk with when you're confronted with difficulties in your life.

"Large studies have clearly shown," she says, "that people who have more social relationships, a larger network of people they interact with on a regular basis, live longer. Research suggests they're less likely to show declines as they're older."

All this research highlights the fact that healthy practices can complement mainstream medicine to help treat and prevent disease. Do things that make you feel good about yourself, mentally and physically. Get enough sleep. Eat a healthy diet and exercise regularly. Develop a network of people you can turn to in difficult times.

If you still find yourself too stressed out, talk to your health care professional. There are many therapies they may recommend to help you deal with stress and its consequences. The effects of being chronically stressed are too serious to simply accept as a fact of modern life. ■

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Don't Let Back Pain Get You Down

Learn How to Minimize Your Risk

Before you reach for that snow shovel this winter, think first about protecting your back. When you do battle with Old Man Winter, or tackle any other kind of heavy lifting at home or on the job, do everything you can to reduce the chance of injury.

About 80% of the population develops back problems at some time in their lives. Back pain can range from a dull, constant ache to a sudden, sharp pain that makes it hard to move. It can start quickly if you fall or lift something too heavy, or it can get worse slowly. Discs that sit between the vertebrae of the spine can rupture or break down. Muscles can strain or tear.

A wide variety of factors can increase your risk of back problems: getting older; being out of shape or overweight; having a job that requires lifting, pushing or pulling while twisting your spine; having poor posture; smoking; and having a disease or condition that causes back pain. Race can also be a risk factor. For example, African American women are 2-3 times more likely than white women to

have part of the lower spine slip out of place.

You can help prevent back pain by standing up straight and minimizing the amount of heavy lifting you do. When the snow drifts beckon, or you must lift something else that's heavy, bend your legs and keep your back straight.

Exercising and keeping your back muscles strong are among the best

ways to minimize your risk of back pain. Maintain a healthy weight or shed some pounds if you weigh too much. And maintain strong bones by making sure to get enough calcium and vitamin D every day.

If you do experience back pain, treatment depends on what kind of pain it is. Acute pain, which starts quickly and lasts less than 6 weeks, usually gets better without any treatment. Pain relievers can help ease the pain until it goes away.

Chronic pain, which lasts for more than 3 months, is much less common. Hot or cold packs may bring temporary relief but don't fix the cause. Behavioral changes, such as learning to lift properly and exercising more, can help in the long term, as can getting more sleep, improving your diet and quitting smoking.



Your doctor might recommend medications or suggest you try complementary and alternative medical treatments, such as manipulation of the spine, transcutaneous electrical nerve stimulation (mild electrical pulses), acupuncture (thin needles used for pain relief) and acupressure (pressure applied to certain places in the body).

Most people with back pain don't need surgery, even if the pain is chronic. Surgery is reserved for situations in which other treatments don't work.

Back pain can also be a sign of many other medical conditions, including arthritis, pregnancy, kidney stones, infections, tumors and stress. That's why it's a good idea to see a doctor if your pain is particularly bad or lasts for more than a few days. ■



Wise Choices Signs to See a Doctor for Back Pain

- Numbness or tingling
- Severe pain that doesn't improve with rest
- Pain after a fall or an injury
- Pain plus any of these problems:
 - trouble urinating
 - weakness
 - numbness in your legs
 - fever
- Weight loss when you're not on a diet



www.niams.nih.gov/hi/topics/pain/backpain.htm
www.ninds.nih.gov/disorders/backpain/backpain.htm

Health Capsules

Cold Weather Tips for Older Adults

Older adults can lose body heat faster than when they were young. A big chill can turn into a dangerous problem before an older person even knows what's happening. Doctors call this serious problem hypothermia, and it can happen indoors or out. A new, easy-to-read booklet from NIH's National Institute on Aging called *Stay Safe in Cold Weather!* offers tips on avoiding this dangerous condition.

Hypothermia strikes when a person's body temperature drops below 95 degrees. Low body temperature can lead to a heart attack, kidney problems, liver damage and

sometimes death. Several hundred people in the U.S., half of them age 65 or older, die from hypothermia each year.

The new 12-page booklet describes hypothermia and discusses how to prevent it both in the home and outdoors, the health problems that can increase an older person's risk of hypothermia and warning signs to look out for. ■



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HealthInformation/
Publications/staysafe](http://www.nia.nih.gov/HealthInformation/Publications/staysafe)
or call 1-800-222-2225



Featured Web Site
Sleep Well. Do Well.
Star Sleeper

starsleep.nhlbi.nih.gov

Inadequate sleep makes it hard for children to focus and perform well in school. They can become irritable and appear overactive. This campaign, with Garfield as the official spokescat, teaches children—along with their parents, educators and healthcare providers—about the importance of adequate nighttime sleep.

From NIH's National Heart, Lung, and Blood Institute and Paws, Inc.



Wise Choices Warning Signs of Hypothermia

Call 911 right away if you think someone has warning signs of hypothermia. Early signs:

- Cold feet and hands
- Puffy or swollen face
- Pale skin
- Shivering (though people with hypothermia don't always shiver)

- Slower speech or slurring words
- Acting sleepy
- Being angry or confused

Later signs of hypothermia:

- Moving slowly, trouble walking or being clumsy
- Stiff and jerky arm or leg movements
- Slow heartbeat that is not regular
- Slow, shallow breathing
- Blacking out or losing consciousness

Circumcision Reduces Risk of HIV

Medically performed circumcision significantly reduces a man's risk of acquiring HIV—the virus that causes AIDS—through heterosexual intercourse, according to 2 studies.

Researchers had noticed that, in certain African and Asian countries, HIV tends to be less prevalent in areas where male circumcision is common. Two international groups of researchers funded by NIH conducted trials—one in Kenya and the other in Uganda—to investigate the link. They randomly assigned HIV-negative heterosexual men to either have a circumcision performed by medical professionals in a clinic or to wait

2 years before circumcision. All the participants were also counseled in HIV prevention.

Both trials reached their enrollment targets by September 2005. They were originally designed to continue until mid-2007. However, a review board assessing interim data found medically performed circumcision to be safe and effective in reducing HIV acquisition in both studies. The study in Kenya, of 2,784 men, showed a 53% reduction of HIV acquisition in circumcised men, while the one in Uganda, of 4,996 men, showed that HIV acquisition was reduced by 48% in circumcised men.

In light of these results, the board recommended that the 2 studies be halted early. All men in the comparison groups will now be offered circumcision.

These studies found that an uncircumcised man is more likely than one who is circumcised to become infected with HIV. Still, it's important to realize that adult male circumcision is not a replacement for proven prevention strategies such as limiting the number of sexual partners and using condoms during intercourse. ■



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result.asp?disease_
id=15&terms=aids](http://health.nih.gov/result.asp?disease_id=15&terms=aids)