

## **Stress reduction: Why you need to get a grip and how**

It damages the body, contributing to heart disease, diabetes and more. In these economic times, it's also a fact of life. Here's how to protect yourself.

By Marnell Jameson, Special to The Times

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Health

Stocks are falling. Companies are handing out pink slips. Home values are collapsing. Financial icons are folding.

And Americans' stress is rising.

The 2008 Stress in America survey, conducted by the American Psychological Assn. and released in October, found that stress levels have increased significantly over the last two years, particularly in the last six months. Money and the economy top the list of concerns.

Among 2,500 participants from across the country, 81% said money was a significant cause of stress, up from 73% in 2007 and 59% in 2006. Worries about other economic issues also increased. Between April and October, worries about work jumped from 62% to 67%; concerns over housing costs rose from 56% to 62%; and job stability woes increased from 48% to 56%. Meanwhile, consumer confidence plummeted to 38.8 points in October (the lowest since the index began in 1967, though it rose slightly in November).

As the economy plummets and stress levels soar, people need to find ways to manage their stress -- or more than their investments will suffer.

Chronic unresolved stress weakens the immune system, increasing our susceptibility to infections such as common colds and other viruses. And when stress increases, so does inflammation, contributing to stroke, arthritis, Type 2 diabetes, periodontal disease and frailty. Additionally, studies have shown, the cumulative effects of unresolved psychological stress contribute to heart disease and high blood pressure.

And if those weren't enough negatives, stress also turns on genes that trigger disease, accelerate aging and lead to depression, says Michael Irwin, professor of psychiatry at UCLA and director of the UCLA Cousins Center for Psychoneuroimmunology.

Adds Janice Kiecolt-Glaser, an Ohio State University psychiatry professor specializing in stress: "I'm absolutely convinced the effects of stress are far worse than what we thought they were."

In a study of caregivers providing long-term care for spouses with dementia, for example, Kiecolt-Glaser and her colleagues found that the caregivers had delayed and substantially weaker immune responses to the influenza vaccine when compared with a control group of people who weren't caregivers, suggesting that the chronic stress of their situation had taken a toll on their ability to fight off viruses. Similar results have been seen among stressed and nonstressed college undergraduates.

In a separate study of female caregivers undergoing the long-term stress of caring for a spouse with Alzheimer's, researchers found that skin wounds on caregivers took 24% longer to heal than those of a control group.

And in a group of 394 healthy adult volunteers who were inoculated with five different strains of virus, the severity of their infection increased in direct correlation to the participants' scores on a psychological stress index. Those who were under more stress got sicker. "Overall, adults who showed higher rates of chronic stress also experienced higher rates of clinical illness," Kiecolt-Glaser said.

But even as advances in neuroscience and biomedicine have helped researchers better understand how stress hurts the body, they have also shown which interventions work to reduce the effects of stress -- and which ones don't.

## **Stress explained**

Stress is what a person perceives as a threat, says Sarah Speck, a preventive cardiologist, and medical director of the Center for CardioVascular Wellness at Swedish Medical Center in Seattle.

When the brain senses a threat -- even if it's a non-physically threatening one, such as a manuscript deadline or a dwindling bank account -- it tells the body to release adrenaline and noradrenaline, the fight or flight hormones. Initially, these hormones create a surge of blood to the heart and brain, which is why we get a rapid heart beat. But in the aftermath of that surge, stress hormones constrict blood vessels, which reduce the amount of oxygen getting to the heart. That makes the heart work harder, raises blood pressure, and can cause angina and chest pain.

Under stress, the brain also triggers adrenal glands to increase production of cortisol, another stress hormone. Cortisol tells the body that it is under siege, and therefore needs

to hoard calories and slow metabolism to prepare for danger. Over time, this can lead to weight gain.

Not all stress, however, is unhealthy. For instance, before you're about to testify in court, the physiological changes that accompany acute stress can enhance alertness and improve certain types of memory. Adrenaline surges do improve your reaction time. Even occasional stress isn't anything to stress about. Most people can weather a storm now and then.

Psychological stress occurs any time an event exceeds an individual's perceived ability to cope, which explains why some people crumble under deadline pressure, and others rise to the occasion with grace and vigor.

"If your primary relationship is good, you're not in financial stress and one of your parents dies, it's stressful, but you don't feel out of control," says Speck. "It's when you're going through a divorce, you lose your job and a parent dies, that can feel like too much."

Acute stress takes more of a toll on a chronically stressed person than it does on a non-stressed person, says Michael Irwin, director of the UCLA Cousins Center for Psychoneuroimmunology.

That's because stress hormones that build over a long period put a strain on the heart, weaken the immune system and trigger inflammatory responses, which set off a cascade of health problems.

The trick, says Speck, is to recognize that stress is a part of life, and that chronic stress left unmanaged has harmful physical effects. You also need to recognize when your body is under stress and know what behaviors do and don't reduce the harmful effects.

For instance, when stressed, people tend to withdraw socially, eat more poorly, abuse alcohol, smoke more, get less physical activity and sleep less. But research shows that exercise, adequate rest, taking care of yourself and interacting with friends and family are among the best ways to manage stress.

### **Ways to relieve stress**

When things get to be too much, exercise, sleep, deep breathing or going out can help, experts say.

While not every stress reduction technique suits everyone, any incremental change -- a little more exercise, a little more sleep, a little deep breathing and a few more nights out with friends -- will help.

## **Get moving**

Evolution has conditioned us to respond to stress as a physical threat, which is why our bodies produce hormones that prepare us to flee from trouble or fight back physically. However, running or punching usually isn't appropriate in our daily routines, so those hormones accumulate. This is where exercise comes in.

Initially, an intense workout is a stressor, boosting the heart rate, blood pressure and adrenaline. But regular exercise leads to lower baseline heart rates, lower blood pressure and lower stress hormone levels when at rest. This makes occasional surges of stress easier to handle.

Vigorous exercise also increases the body's core temperature, meaning the body has to dilate its blood vessels (which stress hormones restrict) to let heat escape. That dilation lowers blood pressure and creates more capacity to circulate oxygen-rich blood.

Regular exercise will bring resting adrenaline rates down so the body has more room for the next flood of stress hormones, says Seattle-based preventive cardiologist Dr. Sarah Speck. Strong evidence also indicates that exercise helps reduce depression, which can accompany long-term stress.

## **Sleep on it**

Here's the paradox: When you're stressed, sleep often suffers. Yet a good night's sleep helps guard against the ravages of stress.

Even one night of tossing and turning raises the level of inflammatory cytokines, says Michael Irwin, director of the UCLA Cousins Center for Psychoneuroimmunology. Cytokines are chemical messengers, or proteins, that send messages between immune cells, and nerve and brain cells. Some promote inflammation; others are anti-inflammatory. A wide spectrum of conditions, including cardiovascular disease, arthritis, diabetes, certain cancers, obesity and functional decline, are linked to an increase in inflammatory cytokines. Experimental sleep deprivation has been found to alter immune responses and increase inflammation.

A study conducted at UCLA in 2006 looked at 30 healthy volunteers who spent four nights in a sleep lab. The first three, they slept from 11 p.m. to 7 a.m., to establish their baseline for inflammatory markers in their blood. The fourth, they stayed awake between 3 and 7 a.m. Just that one night of interrupted sleep induced a three-fold increase in inflammatory markers, the study found.

"High levels of inflammation are markers for an aging immune system. People who are chronically stressed and don't get enough sleep have a greater mortality risk and experience accelerated aging," Irwin says.

The prescription: six to eight hours of sleep a night. Fewer than 5 1/2 hours and inflammation markers rise along with associated health risks.

### **Get out more**

If you feel socially isolated and lack the emotional support of people around you, you're at an increased risk of mortality, illness and coronary disease.

In a paper published last year in the journal *Genome Biology*, biologists at UCLA found that the immune system's inflammatory response was much higher in cells from people who perceived themselves as socially isolated and lonely. Researchers studied gene expression in 14 individuals. Half the group had previously scored in the top 15% of the loneliness scale; the other half scored in the bottom 15. Across the board, the genes of the lonely group's members expressed higher inflammatory responses, and lower anti-inflammatory responses than those in the more social group.

"Genes can either be turned on or turned off," says Irwin. "In socially isolated people, genes that turn on inflammation were more likely to be on, and those that suppressed inflammation were more likely off."

Social networks also help people cope with disaster. Researchers in Louisiana looked at how people's networks reduced the stressful effects after Hurricane Katrina devastated the area in 2005. "People who had better social support fared much better," says Jeanne Hurlbert, lead investigator and professor of sociology at Louisiana State University.

In telephone interviews conducted right after Katrina with residents of two New Orleans-area parishes, 49% of those who said they had enough people to help them only some of the time reported a high level of distress. (High distress was defined as experiencing each day at least two of several symptoms: such as feeling that you couldn't get going, feeling sad, having trouble sleeping, feeling that everything was an effort, feeling that you couldn't shake the blues or having trouble focusing on a task.) Of those who said they had enough people to help them most of the time, 23% reported high distress. Yet, of those who said they had enough people to help them all the time, only 19% reported high stress, says Hurlbert.

## **Chill out**

The counterpoint to intense physical activity -- deliberate relaxation -- also mitigates stress. That's because the nervous system has two arms, one sympathetic and one parasympathetic. Stress excites the sympathetic arm, which makes heart rate, blood pressure and stress hormones rise. The parasympathetic arm is the relaxing one. It begins its work when people do calming activities such as meditation, deep breathing or enjoying a sunset.

Jay Winner, a family practice physician and director of the stress management program at Sansum Clinic in Santa Barbara, teaches classes that help people relax through mindfulness, breathing techniques and meditation.

"Stress often causes problems because you let it," says Winner, also the author of "Take the Stress Out of Your Life." "You control your thoughts. But too many of us let our thoughts control us."

Mindfulness is the ability to deliberately focus on the present moment and to appreciate it. When people are mindful, they feel less urgency.

Practicing mindfulness and meditation trains the brain to focus -- whether on a mantra or a moment, says Irwin. That conscious activity improves the brain's attention span. People who know how to rein in distracting thoughts, which are often worries, and concentrate on the task at hand have a powerful defense against stress.

Studies have shown that during meditation, heart rates, blood pressure and stress hormones drop, and that people who meditate regularly have lower baselines of stress.

"Breathing is underrated," says Speck. People who do breathing exercises religiously produce fewer stress hormones, trigger fewer inflammatory cytokines and lower their blood pressure and heart rates. When we get stressed, we use only the upper third of our lungs, and breathing gets shallow. We don't give our bodies enough oxygen, which causes it to produce more stress hormones and makes the heart beat faster to circulate what little oxygen there is.

To reverse that, Speck recommends pausing for two to five minutes twice a day and breathing four counts in, four counts out.

## **Find love**

Love is a powerful force. It works on the parasympathetic arm of the nervous system and

has a relaxing effect. The idea that you're connected in a deep, intimate way buffers your response to stress. As proof, studies show that adrenaline and cortisol levels are lower in married people, and that married people live longer than single people. "Married people are at less risk, but if you're in a marriage filled with conflict, that's worse than being single," says Irwin.

In a study of 90 newlywed couples, researchers at Ohio State University had couples fill out a questionnaire to determine what they disagreed about. Then they put the couples in a lab, got them to talk about these issues and took blood samples. Stress hormones rose during the arguments, but less so in couples who could laugh at their situations and not get hostile.

"When the interaction was positive, cortisol levels were lower," says Ohio State University psychiatry professor Janice Kiecolt-Glaser.

### **Change perspective**

Because stress is what you perceive to be a threat, changing your perceptions -- or reframing -- can keep stress levels down.

Kiecolt-Glaser teaches reframing to patients in cognitive behavioral training. "The ability to keep in mind that something won't matter in 24 hours or in one month keeps people from overreacting, or catastrophizing events."

The financial setbacks and job insecurities many are feeling right now are causing widespread angst. However, say experts, you control how you let that affect you. You can either perceive your losses as catastrophic, or use the situation to reframe your priorities, take stock of your nonfinancial assets, and focus instead on what you're grateful for.

### **Stress-reduction therapy eases home, workplace pressure**

Kent Garcia, in pain and under duress, was at his breaking point until he gave meditation a try. Now, he's healthier and happier.

Eighteen months ago, Kent Garcia felt he was ready to blow.

The 48-year-old Ventura resident felt pressured at work, where he often put in 12- to 14-hour days sitting at his computer working as a designer for a machine shop. At home, his stepson was having legal trouble and his teenage daughter was acting up. He and his wife were fighting about the kids.

As stress mounted, back pain and migraines flared, along with his temper. He started getting regular epidurals for his back pain and popping Imitrix, a potent migraine medication, 10 or more days a month. His Type 2 diabetes was worsening, along with his relationships with his family. His doctor encouraged him to enroll in a stress-reduction class.

"As soon as I learned how to let the tension go, wow! What a difference," he said.

Garcia now meditates daily, including on his breaks at work, does deep-breathing exercises when he begins to feel tense, and consciously reframes problems. "Now when my daughter acts up, I remind myself that she's not doing this to me, so I don't take it so personally."

As a result, he's healthier and happier at home.

His proof: In the two years before he took the class, he had nine epidurals to treat his back pain. In the year and a half since, he's only had to have two. His use of migraine medication dropped from 10 to 15 pills a month to eight pills a year. His diabetes numbers have improved, and he's getting along better with his family.

"I used to blow my stack. Now when I have a problem I don't explode," he said. "I take a few breaths and just wait and think about what's happening. I've stopped seeing everything as tragic."

### **What methods don't work to reduce stress**

Aromatherapy and drinking may offer some relief, but they don't help the immune system deal with pressure.

Clinical studies have convinced many medical experts on stress that some techniques do reduce stress, and other techniques -- such as yoga, massage and helping others -- probably work, as well, they surmise. Yoga, for example, emphasizes breathing, massage activates the relaxing properties of the parasympathetic nervous system, and helping others gets people's minds off their troubles and lifts mood. But researchers don't have enough data to be sure.

They are fairly confident, however, about what doesn't work.

### **DON'T COUNT ON AROMATHERAPY**

Though inhaling pleasant scents may seem like a welcome relief, it probably won't do much else for you.

In a study she conducted earlier this year, Ohio State's Janice Kiecolt-Glaser and her

colleagues tested the effects of two much-touted scents -- lemon and lavender -- and found that neither seemed to enhance the immune system response. The researchers tracked participants' heart rates, blood pressure, stress hormone levels and immune responses, and found no improvement in any when people inhaled these scents. Nor did the compounds mitigate pain or stress. The study involved 56 healthy men and women who were pre-screened to confirm their ability to detect certain odors. In some cases, even distilled water showed a more positive effect than lavender.

The study, published in the online journal *Psychoneuroendocrinology*, looked for evidence that such aromas go beyond increasing pleasure and actually have a positive medical effect on a person's health.

People often confuse a brief happy feeling with lower stress, Kiecolt-Glaser said. "The brief positive effect of a pleasant scent or a happy movie can actually stimulate stress hormones. More important, briefly activated good feelings do not evoke lower stress responses and do not contribute to long-term positive moods."

"While a massive commercial industry has embraced this notion," Kiecolt-Glaser and her research team concluded, "little, if any, scientific proof has been offered supporting these health claims."

## **DRINKING WON'T HELP**

That's a loser for many reasons. A little social drinking can be relaxing, but consuming much more than one alcoholic drink a day depresses the cellular arm of the immune system, triggers inflammation and contributes to poor sleep. Drinking also causes many people to become hostile or detached in relationships, which leads to feelings of social isolation.