How to Change Your Stress Response (Formerly Chaos or Calm)

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Remember the tale "The Lady or the Tiger?" As it ends, the hero is standing before two identical doors: one conceals a beautiful maiden; the other, a ferocious tiger. The hero must open one of these doors—the choice is his—but he has no way of knowing which will bring forth the lady and which will release the tiger.

I'm sometimes reminded of this story when a patient is describing one of the symptoms of chronic stress: headaches, indigestion, ulcers, tight muscles, high blood pressure, or some combination of these. When I point out that the symptom is stress-related, the patient seems resigned—stress is such a constant in most people's lives that all the doors seem to have tigers lurking behind them. Most of the people who find their way to my office know the fight-or-flight response is hardwired into our nervous system and many have come to accept a constant feeling of tension as normal, even inevitable.

It isn't. Like the hero in the story, we have a choice. There is another door, another response to the challenges of everyday living that is also hardwired into our nervous system. And unlike the hero, whose destiny rests with chance, we can discover which door is which. A general understanding of the nervous system and how it responds to stress, coupled with training in three fundamental yoga techniques, make it possible for us to distinguish one door from the other. Practicing these techniques gives us the power to choose the lady while leaving the door that unleashes the tiger firmly closed.

Releasing the Tiger

The autonomic nervous system controls all the body's involuntary processes: respiratory rate, heart rate, blood pressure, gastric juice secretion, peristalsis, body temperature, and so on. It has two main components or branches—the sympathetic and the parasympathetic. When we feel stressed, our brain activates the sympathetic nervous system, which has come to be known as the fight-or-flight response. This causes the adrenal medulla to secrete adrenaline (also called epinephrine), a hormone that circulates through the bloodstream, affecting almost every organ. Adrenaline revs up the body to survive a threat to life and limb: The heart pumps faster and harder, causing a spike in blood pressure; respiration increases in rate and moves primarily into the chest; airways dilate to bring more oxygen into the body; blood sugar rises to provide a ready supply of fuel; some blood vessels constrict to shunt blood away from the skin and the core of the body, while others dilate to bring more blood to the brain and limbs. The result? A body pumped up to fight or run, and a mind that is hyperalert.

This response is a crucial reaction to a life-threatening event: when we find ourselves face-to-face with a mountain lion, the stress response dramatically increases our chances of surviving. And we've all heard stories of fantastic feats: the mom lifting a car off her trapped child, the firefighter carrying a man twice his size from a burning building. These are the benefits of the sympathetic nervous system. Any time we respond quickly and decisively when a life is at stake, this is the system to thank.

The fight-or-flight response is meant to be triggered sporadically, in those rare moments when we are actually in peril. Ideally, it remains dormant until the next close call (weeks, months, or even years later!). But in many of us this response is triggered daily, even hourly. Some people—soldiers, tightrope walkers, members of a SWAT team, for example—do find themselves in life-or-death situations frequently. But for most of us, such situations are rare: a mugging, a traffic accident, a close-up with a bear in the backcountry. Once the threatening event is over, hormonal signals switch off the stress response, and homeostasis is reestablished.

The problem is that for many of us the fight-or-flight response rarely switches off, and stress hormones wash through the body almost continuously.

The source of our stress is psychological rather than physical—a perception that something crucial to us is threatened.

Fear of the unknown, major changes in our circumstances, uncertainty about the future, our negative attitudes—all these are sources of stress. Today we worry more about our jobs, our relationships, or getting stuck in traffic than we do about fighting off a wild animal, but even though the perceived threat is psychological, it still triggers the archaic survival response.
The upshot is that our bodies are in a constant state of tension, ready to fight or flee, and this causes a host of physical problems. You can see what some of these are if you look again at what happens when adrenaline courses through the body: elevated blood pressure, rapid shallow breathing, high blood sugar, and indigestion. What is more, adrenaline makes our platelets stickier, so our blood will clot quickly if we are wounded. This increases our chances of surviving a physical injury—but chronically sticky platelets are more apt to clot and create blockages in our arteries. And this sets the stage for a heart attack or a stroke.
The damage doesn't end there. When we are constantly in fight-or-flight mode, the adrenal cortex begins to secrete cortisol, a steroid whose job is to help us adapt to a prolonged emergency by ensuring that we have enough fuel. Cortisol acts on the liver and muscle tissues, causing them to synthesize sugars (glucose) and fats and release them into the bloodstream. From the body's viewpoint, this is a reasonable response—dumping fat and sugar into the blood will help us survive a shipwreck, for example. But when this fuel is not metabolized in response to prolonged physical duress, disease results. Excess sugar in the bloodstream leads to diabetes, and excess fat to high cholesterol/high triglycerides. Both conditions boost our chances of developing heart disease.

The steroids cortisol and cortisone quell inflammation in autoimmune diseases and asthma, and so are useful when used infrequently and for brief periods, but their constant presence in the bloodstream suppresses immune function. This causes the white blood cells—those hardy defenders against bacteria, viruses, cancer cells, fungi, and other harmful microorganisms—to become sluggish. And this makes us more prone to disease, especially cancer and chronic infections like Lyme disease, hepatitis, and the Epstein-Barr virus.

Sounds grim, doesn't it? It is. It's a tiger. A chronically activated sympathetic nervous system keeps the body under constant pressure. If we ignore early warning symptoms—tight shoulders, digestive upset, recurring headaches, an increasing tendency to lose our temper or become easily upset—sooner or later the tiger will tear us up. But we can make another choice. The autonomic nervous system has another component, the parasympathetic nervous system. Rather than living under the tyranny of a ramped-up sympathetic nervous system, we can learn to trigger the parasympathetic system, the rest-and-digest response, instead.

Just as the fight-or-flight response automatically kicks in at the threat of danger, the rest-and-digest response automatically responds to our sense of equilibrium. When it is activated, the heart rate drops, blood pressure falls, and respiration slows and deepens. Blood flow to the core of the body is reestablished—this promotes good digestion, supports the immune system, and infuses us with a sense of well-being.

We unconsciously achieve this state on vacation, in the throes of a hearty laugh, or in deep sleep. It feels good, and it offers a much needed respite from the hectic pace we set for ourselves. But we have come to accept stress as the norm and to expect the feeling of relaxed well-being to come about only sporadically—and so it does. We release the tiger a dozen times a day, even though the other door is also there in every moment. Once we learn to open it at will, we can override the harmful habit of

triggering our stress response by activating the rest-and-digest component of our nervous system instead.

Greeting the Lady

I use a variety of natural therapies in my medical practice, but the basic treatments are drawn from yoga—stretching, breathing, relaxation, and meditation—and these techniques are especially effective when it comes to managing stress. You already know from personal experience that aerobic exercise is excellent for dissipating stress-created tension, and that sugar, caffeine, and spicy food contribute to jangling your nervous system and shortening your temper. You are probably also familiar with the relaxing effects of practicing yoga postures—they teach us to move and stretch our tense, strained bodies and to focus on the breath. But do you know that breathing slowly and deeply is the easiest way to activate the rest-and-digest system? That is one reason yoga classes are so popular—they soothe frazzled nerves and quiet anxious minds. But yoga also works at an even deeper level: it reestablishes healthy breathing patterns, teaches us to relax consciously and systematically, and gives us the opportunity to explore the inner workings of our minds through meditation. These techniques—both separately and in combination—nourish and strengthen the parasympathetic nervous system so that the relax-and-digest response becomes our normal mode. The fight-or-flight response is then reserved for emergencies, as nature intended. So let's take a look at some ways we can open Door Number Two.

Diaphragmatic Breathing

Babies and young children breathe deeply and fully, using the dome-shaped diaphragm that separates the chest and abdominal cavities to move air in and out of their lungs. Their bellies are relaxed and move in concert with their breath. This is the natural, healthy way to breathe. But as we grow up we are taught to constrict the abdomen (Pull your stomach in and stand up straight!), and that training, coupled with an unconscious tendency to tighten the belly when we experience stress, disrupts the natural flow of our breath. With the abdomen pulled in, the breath is confined to the upper portion of the lungs (from about the nipple line up). And because this breathing pattern is perceived by the body to be a stress response, it reinforces the fight-or-flight reaction.

Diaphragmatic breathing, on the other hand, activates the relax-and-digest response by stimulating the primary mediator of the parasympathetic nervous system, the vagus nerve. This nerve travels from the brain to nearly all the thoracic and abdominal organs ("vagus" comes from the same root as "vagabond"), and triggers a cascade of calming effects. Most of the time we wait for it to be activated by something pleasant and hope for a trickle-down effect, not realizing that the nerve (and hence the entire parasympathetic nervous system) can be turned on from the bottom up by diaphragmatic breathing.

Of all the processes regulated by the autonomic nervous system (heart rate, blood pressure, secretion of gastric juices, peristalsis, body temperature, etc.), only breathing can be controlled consciously. And in doing so, we stimulate the branch of the vagus nerve that innervates the diaphragm (which carries a message to the other vagus branches and the brain) to activate the entire rest-and-digest response. This is why the first step in reversing our chronic stress response is to learn to breathe again the way we were born to breathe.

If you haven't been trained in diaphragmatic breathing, find an experienced teacher and practice every day until it once again becomes a habit. Then, as you develop the skill of breathing from the diaphragm in the course of your daily activities, you will begin to experience your breath as a barometer for the nervous system. As long as you are breathing deeply and from the diaphragm, you will find that you can access a feeling of calm and balance even when you are confronted with an unpleasant situation. And you will also notice that if you allow your breath to become shallow by breathing from your chest,

anxiety creeps in, your muscles tighten, and your mind begins to race and spin. When this agitated breathing is prolonged, it creates an unsettled and defensive outlook on life. Once you know this from your own experience, you can make a different choice.

Systematic Relaxation

To activate the parasympathetic nervous system, diaphragmatic breathing makes an excellent beginning. But we need to do more, particularly when we have spent years unconsciously flinging open the door to the tiger's cage. Daily periods of relaxation are a must. When I tell my patients this, many of them say they relax while they watch TV or read or knit or socialize. The problem is that while these activities distract the mind from its usual worries (and so provide some relief), they do little to relieve the stress we hold in the form of muscular contraction and tension.

To reverse well-established habits of holding tension in our bodies, we need to work with what the yogis call the energy body (pranamaya kosha). Systematic relaxation practices offer a precise, orderly technique for releasing tension from head to toe. There are a number of these techniques, and like all yoga practices, they are best learned from an experienced teacher, and then honed through patient practice. They range in complexity from simple tension/relaxation exercises and point-to-point breathing practices to techniques that require making fine distinctions among various points in the energy body. But all involve moving our attention through the body in a methodical fashion, usually while resting in shavasana (corpse pose). And all require that we withdraw our attention from the drama of our lives. For the duration of the practice, we let go of our memories, plans, worries, and fantasies, and focus on what we are doing here and now as we move our awareness calmly and quietly from one part of the body to another.

Breathing from the diaphragm, while systematically bringing our full attention to one point in the body after another, not only releases tension and fatigue in the places where we rest our attention, it also augments the energy flow among those points. This promotes both healing and cleansing. Further, because full engagement with a systematic relaxation practice requires that we clear our minds and attend fully to the present moment, we are also refining a skill that opens the door to meditation.

Meditation

Since stress begins with the perception that our lives (or at least our sense of well-being) are in danger, working with the mind to alter our perceptions is the most powerful technique for quieting our stress response. Most of what activates our fight-or-flight response is not a matter of life or death. We may feel pressured to accomplish a certain task or worried about what will happen at tomorrow's meeting—but our lives don't depend upon the outcome. With rare exceptions, the habitual thought patterns that create the experience of stress for us are overreactions to events in our lives. Instead of responding in a way that floods the body with adrenaline, however, we can reframe the experience to make it not only less stressful, but also more accurate in reflecting what is really happening ("I'm only in a traffic jam, I'm not at death's door." "I want to please this person, but if I don't, I'm not going to be fired.") This goes a long way toward quieting the fight-or-flight response, and it is a skill that comes with experience in meditation.

Meditation helps us understand our mental habits by giving us the opportunity to observe them from a neutral vantage point. This is why I often prescribe meditation to my patients as a way to manage stress. I don't mean to minimize meditation as a means of spiritual transformation, but in its early stages, one of the most delicious benefits of meditation practice is seeing that it is possible to avoid getting sucked into the banter and hysteria of our mental chatter. Meditation allows us to witness that banter—to observe it impartially—without being smack in the middle of it. It's like watching a rainstorm from a

warm, dry room. The peace we feel when we are watching our minds rather than identifying with our thoughts is the peace that is at our core.

When you are first learning to meditate, the mind will wander away from the object of meditation to dwell on some other thought. This will happen again and again. Your job is to gently and repeatedly bring your attention back to your object of meditation, and to do it patiently, without judgment. Sometimes it may seem as if the distracting thoughts are like movie images projected onto a personal viewing screen in your mind. And some may be strange and wild. But you are in the rest-and-digest mode, and as strange as they are, your projections don't trigger the fight-or-flight response. The ability to simply observe them is evidence that they aren't you. And the ability to distinguish between the inner observer in you and the chaotic jumble in your mind means that you can respond with equanimity, rather than react and flood your body with stress hormones.

The more we practice meditation, the more we will be able to discriminate between what is real and what is not—between what is truly life-threatening and what is just a habitual overreaction. And once we begin to see that almost everything that triggers our sympathetic nervous system is merely a habitual overreaction, we can begin to make different choices. Instead of reacting to an unpleasant event, we can cushion the jarring effect on our nervous system by observing it in the same way that we observe our mental chatter in meditation and by consciously breathing from the diaphragm.

This is likely to prove challenging in the beginning. When your spouse or a coworker snaps at you, you may find yourself halfway into an angry retort before you notice that you have switched to chest breathing. Then you need to remind yourself to breathe from the diaphragm and to find a neutral vantage point. But this skill comes with time, particularly when you are sitting for meditation regularly, practicing diaphragmatic breathing, and punctuating your day with a systematic relaxation practice. And as you choose to activate your rest-and-digest response consciously and continuously, you will find yourself in fight-or-flight mode only when your car skids on a patch of ice or the cat knocks over a candle and sets the curtains on fire. Your health will improve, to say nothing of your outlook on life. You have learned to choose the right door.

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Carrie Demers MD, has practiced integrative medicine for 22 years. After earning her medical degree and becoming board-certified in internal medicine, Dr. Demers went on to study massage, homeopathy, yoga, meditation, nutrition, herbal medicine, and Ayurveda. She uses all these modalities to support patients' inherent ability to heal. Dr. Demers sees patients, writes articles, and lectures nationally on integrative medicine. She is board-certified in integrative medicine, and has been the medical director of the PureRejuv Wellness Center for the past 20 years.