



oh what a feeling!

A few years ago, I took up rock climbing as yet another exhilarating way to indulge my love of the outdoors. Through rock climbing I discovered several things: the inherent strength of the body, the consequences of individual movements, and the pureness of being out in nature. I also discovered that I am deathly afraid of heights. Being up on the rock face for the first time, a mere 20 feet from the ground, made my hands tremble and my heart pound. Harnessed or not, I was definitely uneasy. Years later I'm still a little shaky with each climb. The difference is now I consider it part of the fun.

Anyone who's ever faced an intimidating physical challenge knows that feeling—it's part excitement, part nausea. Whether you're dangling precariously from a jagged crag or chasing the perfect wave, what keeps you coming back for more is that sublime rush that makes your heart race and your spirit soar.

This experience is the release of epinephrine (the technical term for adrenaline), courtesy of your adrenals, two triangle-shaped glands piggybacking your kidneys. When faced with a hairy situation, your brain signals them to secrete not only epinephrine but also its lesser-known partner norepinephrine. These hormones are sort of chemical messengers, sending information through your body faster than you can open your mouth to scream. They tell your heart to beat a little faster, raising your blood pressure and making your hands cold and sweaty; and they stimulate glucose production, raising your blood sugar and giving your muscles the extra fuel they need. They also cause your digestion to slow or stop completely (giving you the feeling of "butterflies" in your stomach) and your mouth to feel as dry as the Sahara from the lack of saliva. Simply stated, your body is funneling all of your available energy to cope with the stressor at hand and to



How adrenaline works to keep you going.

BY JESSICA RIDENOUR

prepare you for what is commonly known as "fight-or-flight."

Fight-or-flight is a biological survival mechanism that has its roots in the earliest days of human life. Though you don't have to worry much about being jumped by wild, snaggle-toothed animals anymore, this survival instinct is still part of your physical makeup, and it assists you in whatever frightening situations you may encounter, whether running from an attacker or conquering a rocky slope on your mountain bike. Your body innately knows how to take care of itself. Think of

epinephrine as the first-response team, focusing energy to your heart and muscles and getting you ready for action. If the dangerous situation persists, a second team of adrenal steroids, called glucocorticoids, comes to the rescue, keeping the blood sugar high to provide extra energy.

You have to be careful not to overdo it, however. These hormones are broken down and eliminated by the body fairly quickly, leaving you exhausted and unable to deal with new stressors. Although a certain amount of stress can motivate you, making you feel more daring or alert, excessive stress can impair your performance and enjoyment of the sport. Your spirit may be flying high, but your fine motor skills are diminished with the adrenaline buzz, enhancing your chances for injury. Continued stress can cause health issues for women, such as a disrupted menstrual cycle and mild gastrointestinal upset.

Although traditionally it's been thought that women and men respond to an epinephrine release in much the same way physiologically, a study that emerged in 2000 suggests that women have a much different way of coping than the traditional fight-or-flight response. The UCLA-based study, titled "Female Responses to Stress: Tend and Befriend, Not Fight or Flight," sought to examine any differences in the way men and women react to stressful conditions. The study gives life to a

new model called "tend and befriend," which states that women are more likely to protect their young and form alliances with other women when finding themselves in a sticky situation. This may be in part because of a calming hormone called oxytocin released from the pituitary gland. Men also produce this hormone, but their male sex hormones, like testosterone, may override the effect. So next time you want to indulge in an adrenaline-

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pumping adventure, consider taking your girlfriends with you; they'll not only provide camaraderie, but support and encouragement as well.

It is possible that the adrenaline rush is too overwhelming at times, but there are easy and natural ways to manage feelings of adrenaline-related fear. Meditation is one effective way to calm the mind and focus on

the activity at hand. Dr. Elizabeth Lee Vliet, medical director of HER Place in Tucson, Arizona, and author of *It's My Ovaries, Stupid!* (Scribner, 2003), also suggests visualization and deep breathing as a way to tame the fear monster.

"Deep breathing changes the pH of the blood chemistry, which helps to elicit a little more calm response," says Dr. Vliet.

Before your competition, or whatever endeavor is making your pulse quicken, take a moment to imagine yourself in action, strong and confident, while focusing on your breath. A brief moment of visualization—like a mental rehearsal—can help keep you cool and in control. Being well rested and fueled with nourishing, wholesome food also ensures that you'll function at peak performance, keeping your confidence high and your fear at a minimum. If you're still uptight, unwind with a cup of chamomile tea, a gentle relaxant for the body and spirit.

An adrenaline rush is an amazing natural high with very few side effects, the possible exception being bruises, scrapes, or sore muscles. Protective gear and good judgment go a long way toward keeping you in one piece doing whatever sport you prefer. Adrenaline is also supposedly an aphrodisiac, which will no doubt make your honey appreciate your thrill-seeking tendencies as well. So get outside and feel the rush. ✨

wonder women



What about those amazing stories you hear about people performing adrenaline-fueled feats of strength? Most of them are probably true. Consider these examples:

In 2002 a 5-foot-2-inch, 110-pound Massachusetts woman lifted a 4,000-pound van after it rolled over her husband as he was working on it, as reported by the Concord Monitor. "You're not going to see humans tossing two-ton boulders," says Dr. Louise Freeman, assistant professor of psychology at Mary Baldwin College in Virginia. "One thing is this immediate response where you get a lot more energy resources devoted to your muscles. They burn more sugar and can lift more at that moment."

Remember Kerri Strug at the 1996 Olympics? During the first vault, she seriously injured her ankle and was in a great deal of pain. But in the stress of the moment, with the gold medal at stake, she managed to perform a prize-winning vault on it just minutes later. Dr. Freeman says, "The other immediate effect is analgesia, the loss of sensation of pain. The combination of this increased and more efficient use of energy by your muscles and the loss of pain sensation...you find yourself capable of something you wouldn't normally be capable of."

Lynn Cox astounded physiologists, and everyone else for that matter, when in 1987 she swam across the Bering Strait, from the United States to the former Soviet Union. Although her rigorous training cannot be discounted, adrenaline undoubtedly kept her moving in the frigid 38 degree F water. She wore only a swimsuit, a cap, and goggles. That's right. No wetsuit. No shark protection. It goes to show that with a jolt of adrenaline, along with guts and determination, amazing things can happen.