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## Stress for the Figure

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# Stress for the Figure

*Could adrenaline be the key to effective weight loss?*



by Hannah Halusker

If working up a sweat on the treadmill at the gym is not your idea of a fun workout regimen, scientists may have discovered a solution for you. All it takes is some sort of physical trauma to kick-start your body's adrenaline response. Researchers at the University of Texas Medical Branch in Galveston conducted a study on 48 child and adult victims of third degree burns and discovered that some of the fat in their bodies transformed from white adipose tissue to brown adipose tissue. This tissue burns more calories and generates more heat than white tissue. Adrenaline, a hormone that is secreted in response to stress, is believed to have acted on burn victims' fat cells to stimulate this transformation.

Brown fat, which has an abundance of dark-hued, high energy mitochondria, is important to generate heat in infants who cannot yet shiver to warm themselves. It was originally thought that this brown fat disappears after infancy. However, in recent years, brown fat has been discovered in the neck, shoulders, and spinal cord of adults, prompting scientists to study its possible applications for curbing weight-related diseases. A number of studies have shown that shivering during exposure to extremely cold temperatures can trigger the change of white fat to brown fat in mice, ultimately burning hundreds more calories every day.

**“Adrenaline...acted on their fat cells to stimulate this transformation.”**

In the current study, published in *Science*, it was postulated that burn victims, having lost their skin, converted white fat to brown fat to retain heat and maintain their weight during the recovery process. Dr. Labros Sidossis and his team of researchers believe adrenaline is the hormone that activated the fat conversion, though they're not the first to cite the connection. Animal studies, like those performed on mice, have shown a correlation between adrenaline and brown fat as well.

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“The next step is to find the mechanism,” says Sidossis. His team is now monitoring the burn patients, to see how long the high-energy brown fat remains before its cells begin to degrade. They're also trying to determine the molecular mechanism that regulates the pathway for a white-fat-to-brown-fat transformation. Once the mechanism is understood, a drug can be developed that would help combat obesity. In targeting obesity, many other weight-related illnesses could be managed, such as high cholesterol and diabetes. Unfortunately, until that drug is formulated, regular dates with the gym and a nutritious diet are your best bets for shedding the pounds and staying healthy. 🐾

