

HighBeam Research

Title: Maine scientist finds vibration slims abdomen ; His mouse study suggests exercise may move fat to where it benefits the body.

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Maine scientist finds vibration slims abdomen ; His mouse study suggests exercise may move fat to where it benefits the body.

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Don't throw away your treadmill just yet, but scientists are exploring whether standing on a slightly vibrating platform for a few minutes a day could keep love handles and beer bellies at bay.

On Monday, a Portland-area scientist and his research partners announced that mice placed on a vibrating platform for 15 minutes a day for 15 weeks developed 27 percent fewer abdominal fat cells, as well as substantially reduced triglycerides in the liver and other key risk factors in type 2 diabetes.

"The vibration changes the fat distribution. We're not sure what the mechanism is. The stem cells aren't getting to the fat depots," said Clifford Rosen, one of the mice study's authors and an osteoporosis clinician and researcher at The Jackson Laboratory and at the Maine Medical Center Research Institute in Scarborough.

In other words, the quaking and shaking that goes along with vigorous exercise might be doing more than burning calories and shrinking existing fat cells, Rosen said. It may be moving some of those would-be fat cells around your body to areas where they benefit the body, instead of settling in around internal organs.

The mice didn't actually lose weight or weigh less than their counterparts, but they did show greater bone density, said Rosen. That could mean that the vibrations somehow redirect stem cells that had been destined to become abdominal fat cells to migrate instead to the bone marrow.

"In hindsight, perhaps this should not be so surprising, because bone and muscle are well known to positively respond to mechanical challenges, whereas fat thrives on inactivity," the researchers wrote in a paper published online Monday in the Proceedings of the National Academy of Sciences. The study was produced by researchers at Stony Brook University and Cold Spring Harbor Laboratory in New York, as well as The Jackson Laboratory in Bar Harbor.

Researchers elsewhere are looking into whether the technique might work for people.

"It's very exciting. It's a whole new concept of fat moving from one depot to another," Rosen said.

How the mouse study will translate for humans remains to be seen, he said. There is a National Institutes of Health-sponsored study under way at Harvard using a similar hypothesis, Rosen said.

Shaking, rolling and vibrating - without even breaking a sweat - has long been a staple on the fitness fad circuit, dating back to the old "vibrating belt" machines and fat rollers that jiggled those extra pounds around. Today there are plenty of advertisements for vibrating boards being sold as weight-loss tools.

But Rosen said the key to the study - and what makes it very different from exercise equipment on the market - is the frequency and magnitude of the shaking. The vibrating in the study is barely perceptible, while over-the-counter products tend to have a much higher magnitude, he said.

The vibrating tables used for the mice are scaled-down versions of the kind used currently in the medical community, usually for improving bone mass and speeding recovery from injury.

But at \$2,500 a pop, they are generally only used within the medical environment, much like an ultrasound machine, Rosen said.

Rosen has used one of the machines himself, to recover from an injury. He said it was like riding an escalator, with a barely perceptible motion.

"If you hold a glass of water on the machine, the water won't even move," he said. "There is just this gentle murmur."

Rosen said using the machine won't cause any harm, either.

"You might get bored, that's about it," he said.

In the next stage, Rosen said, researchers plan to use imaging equipment at Maine Medical Center to view the fat cells in mouse bone marrow to see if that is where the fat cells are located instead of the abdomen.

"We think that some of the fat is not going to a peripheral site, but staying in the bone marrow where it might provide energy for marrow cells," he said.

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