Mild vibrations may provide some of the same benefits to obese people as exercise

November 29 2012

If you're looking to get some of the benefits of exercise without doing the work, here's some good news. A new research report published online in *The FASEB Journal* shows that low-intensity vibrations led to improvements in the immune function of obese mice. If the same effect can be found in people, this could have clinical benefits for obese people suffering from a wide range of immune problems related to obesity.

"This study demonstrates that mechanical signals can help restore an immune system compromised by obesity," said Clinton Rubin, Ph.D., study author from the Department of Biomedical Engineering at Stony Brook University in Stony Brook, New York. "While it is well known that obesity can cripple many physiologic systems, this work suggests that mechanical signals—in the absence of drugs—can help combat this disease and its sequelae. That these mechanical signals are so brief, and so mild, is further evidence of how exquisitely tuned our body is to external signals, and that remaining active—climbing stairs at work, taking a walk at lunch, standing while reading a book—will help achieve and retain good health. Stand up!"

To make this discovery, Rubin and colleagues fed a group of adult mice a high fat diet for seven months to make them obese. At the end of this first phase of the experiment, the damage to the immune and skeletal systems of the obese mice was significant, decreasing B- and T-cell populations in the blood, and markedly accelerating the loss of bone. The second phase began after the mice were obese relative to regular controls, with the creation of a sub-group that was subjected to daily

15-minute bouts of low-intensity vibration, barely perceptible to human touch. Results showed that the vibration intervention helped to rescue both the immune and skeletal systems, returning them toward outcomes measured in mice that were fed a regular diet. This study provides evidence that obesity markedly reduces the production of B- and T-cells and that brief daily exposure to low magnitude mechanical signals rescues B- and T-cell populations, even in a mouse that is already obese.

"This solid support for a shaky intervention should get scientists and health care professionals buzzing," said Gerald Weissmann, M.D., Editor-in-Chief of *The* FASEB Journal. "If it works out in people, low intensity vibration could be a relatively cheap way of helping obese folks regain health without drugs - until they lose weight by diet and exercise."

More information: M. Ete Chan, Benjamin J. Adler, Danielle E. Green, and Clinton T. Rubin. Bone structure and B-cell populations, crippled by obesity, are partially rescued by brief daily exposure to low-magnitude mechanical signals. *FASEB J* 26:4855-4863, doi:10.1096/fj.12-209841

Provided by Federation of American Societies for Experimental Biology