

Weight Training Helps Women

Long-Term Training Ups Growth Hormone Used for Stronger Bones and Muscles

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Dec. 1, 2006 -- Women who undergo long-term weight training have more active forms of bone- and muscle-strengthening growth hormone.

That finding comes from a detailed study of different forms of growth hormone seen in young women who underwent various weight-training regimens.

The study, by researchers from several U.S. sites, was led by William J. Kraemer, PhD, of the University of Connecticut at Storrs.

In the study, women who underwent six months of moderate- or high-intensity training and aerobic exercise had increased levels of various forms of growth hormone.

Moreover, the types of growth hormone were more biologically active than growth hormone variants found in women who did not regularly exercise.

The conclusion?

"Women need to have heavy-loading cycle workouts in their resistance training routines, as it helps to build muscle and bone," Kraemer says in a news release.

The findings appear in the December issue of the *American Journal of Physiology-Endocrinology and Metabolism*.

Growth Hormone Important for Women

The pea-sized pituitary gland at the base of the skull makes growth hormone.

This molecule has the remarkable ability to break down and reform into more than 100 variants.

Researchers are only beginning to understand that these variants can have very different actions.

For women seeking to build and maintain bone and muscle, growth hormone plays a more important role than it does in men.

That's because men's bodies rely more on the male sex hormone, testosterone.

In the study, Kraemer's team looked at 74 healthy women who had not worked out regularly for at least a year. On average, the women were 23 years old, just under five-and-a-half feet tall, and weighed just under 141 pounds.

A third of the women did not enter an exercise regimen and served as a control group.

The remaining women were divided into four exercise groups.

One did moderate intensity, whole-body weight training to build strength. A second group did high intensity, whole-body weight training to build muscle.

The third and fourth groups did only upper-body training, either at moderate or high intensity.

All the training groups also did 25-35 minutes of aerobic exercise three days a week.

After six months, the different exercise groups had different kinds of increases in different growth-hormone variants.

It's not yet clear what these differences mean. But overall, weight training significantly increased the women's biologically active growth hormone levels.

"This study shows that not every form of growth hormone responds in the same way, but is dependent upon the exercise protocol," Kraemer said.

"This may forever change the way we look at growth hormone in the circulation with exercise and training," he says.

SOURCES: Kraemer, W. *American Journal of Physiology-Endocrinology and Metabolism*, December 2006; vol 291: pp 1177-1187. News release, American Physiological Society.

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