

## HighBeam Research

**Title:** NEW BUZZ ON AN OLD WORKOUT FAD

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Remember the vibrating belts that were supposed to melt fat away? A new vibration-based fitness fad is sweeping into Massachusetts, targeting flabby boomers and weak-boned senior citizens. The pitch this time: Just standing on a vibrating platform can strengthen bone and muscle, and exercising on the platform can boost athletes' performance.

Unlike the gimmickry of the old vibrating belts, there is a growing body of small studies that suggests that the vibrating platforms may actually work, although not specifically for weight loss.

The National Aeronautics and Space Administration sees enough potential that it is funding research on whether the machines can counter the damaging effects of weightlessness. Boston scientists are about to launch a large study to determine whether just 10 minutes a day can reduce osteoporosis.

"It's really appealing," said Marian T. Hannan, who will oversee the study as codirector of musculo skeletal research at Hebrew SeniorLife, an organization that cares for and studies the elderly. "To stand on a platform and prevent osteoporosis would be heavenly. Animal models and preliminary data [are] incredibly promising. But it's not quite ready for prime time yet."

Entrepreneurs aren't waiting for the definitive science, however. In advertising campaigns that have been stepped up over the last few months, manufacturers say that standing on the platform elevates mood, boosts strength, "increases production of hormones used for regeneration," "expedites the recovery of damaged muscles and tendons," and "stimulates the neuromuscular system." Companies are selling the devices to sports teams, health clubs, and individuals.

The Celtics, for example, use a vibrating platform for conditioning and rehabilitation from injuries, according to spokesman Jeff Twiss. The Red Sox bought a machine this season and are just beginning to work it into their routines, according to spokesman John Blake.

The Core Fitness health club in Franklin is drawing clients from as far as Cape Cod to use the platform it bought in October. A natural healer in Lexington treats hundreds of clients with a platform, and a company advertising "the machine that exercises you" in Boston newspapers says it has sold about 150 vibration machines to Massachusetts residents in the last few months.

Frances Figueiredo, of Hingham, uses her home machine twice a day for at least 10 minutes to exercise and relax. In just five weeks, she says, it has cured her plantar fasciitis, an inflammation of the foot that causes heel pain. She also hopes it will ward off osteoporosis, which is beginning to set in as she nears 60.

"It's like a weight bench with two little feet," she says. "You just plug it in. I've had every kind of exercise equipment you can think of. This is the only one I've liked."

She often sits in her recliner and puts her feet on the platform while doing crosswords. Other times, she stands barefoot on the bench while stretching or lifting small weights. She also puts her 8-year-old yellow Labrador, Casey, on the machine and says it has eased the dog's arthritis.

Scientists say the machines, if proven effective, may be most helpful for people who can't or won't exercise, particularly the elderly. But some fear that the machines could harm frailer users.

The commercial machines including VibraFlex, Power Plate, and VibroGym stand a few inches off the floor and feature a platform about 2 feet by 3 feet that vibrates a few millimeters up and down or side to side at frequencies up to 60 times per second. Users can adjust the intensity, and most of the companies recommend short bursts of time on the platforms. At high intensity, the force rattles the body, requiring significant effort to exercise against it.

A home machine called Soloflex Whole Body Vibration Platform is smaller and less powerful, generating more of a massage sensation at the lowest setting. Some of the companies have been selling these machines in the United States since 2000, charging upwards of \$9,000 for commercial models and \$395 to \$3,500 for home models.

Negative effects reported by users have included dizziness, exhaustion, and headaches. "If you stand up and lock your knees by mistake, then your brain is slapping against the side of your head," said Rob Thompson, a senior trainer at Core Fitness, who uses the Power Plate with most of his 40 clients and calls it "one of the toughest workouts you'll ever do."

But some worry about the long-term effects. Persistent strong vibrations, such as those experienced by jackhammer operators and truck drivers, can cause back pain, circulation problems, and damage to cartilage, ligaments, and tendons.

Some of the vibrating platforms generate force "well beyond the limits recommended for human tolerance" by OSHA and other agencies, said Clinton T. Rubin, a professor of biomedical engineering at the State University of New York at Stony Brook. Rubin, who is studying the effects of the machines for NASA and thinks they may have great potential "as a passive exercise," has a financial stake in a company that is developing a platform that generates barely perceptible vibrations.

The other companies defend their products.

"The body is able to withstand high force for short durations," said Scott Hopson, director of research, education, and training for Power Plate. Most of the companies recommend that users step off the machines every 30 to 60 seconds for a rest.

The machines were developed decades ago and are widely used in Europe. But they have only made inroads in the United States in the last few years.

Scientists do not yet know how the vibration works in the body. Many suggest that the vibration causes muscles to tense and release, which strengthens them and exerts pressure on the bones.

Studies of the machines' effects, each involving fewer than 100 people and many only a handful, show varying results. The studies use different machines, durations, and intensities, and there is no consensus on what is most effective.

In young, fit adults, one study found that vibrating platforms improved leg strength as much as resistance training with weights. But another found that the vibrations improved only explosive power, such as that needed for jumping. A third study found a three-fold increase in flexibility and strength.

Preliminary studies in nursing home residents found that standing on the platform improved balance and ability to walk. Three studies in healthy older people found an increase in muscle strength equal to that achieved by a control group that used traditional exercise machines.

The effects on bone are mixed. One study of 70 postmenopausal women who used a platform for six months found an increase in hip bone density that the researchers equated to six months on anti- osteoporosis drugs. But a second study found only a halt to bone loss, compared to people taking a placebo, and a third found no difference between a control group and people using the platform.

Hannan's study is designed to test whether low-level vibration daily for two years can increase bone density of the hip and spine in people over 65 who have osteoporosis or are developing it.

There is some preliminary evidence that vibration may help rehabilitate spinal cord injuries and reduce symptoms of Parkinson's disease and multiple sclerosis. But there is little backing for statements by manufacturers and users that they detoxify the body, increase hormones, or increase vitality.

Yet, Becky Chambers, a natural healer in Lexington, says she's seen the VibroGym reduce allergies and boost energy when combined with changes in diet. One of her clients, Chad Asnes of Sharon, uses it several times a week for 10 minutes. The 30-year-old works up a sweat as he does push-ups, squats, situps, and arm exercises while resisting the vibrations.

"It really takes my exercise to the next level," he said.

The American Council on Exercise urges consumers to approach the machines with caution.

"It's too early to endorse or to denounce," said Cedric Bryant, the council's chief scientific officer. "For now, I'd encourage people to look at them as a supplement to their existing training programs, but not a replacement. And I'd encourage them not to fall prey to a lot of the hype."

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