Can you lose weight with vibrations?

Machines like this one which vibrate your body while you stand on it or exercise on it have been touted by gurus as fat-busters. Doctors give their take on their effectiveness and warn that long-term use may lead to nerve and organ damage.

Dr. Rubin said: "A new energy is needed to perform the same exercise. More calories are burnt in the vibrating plate.

For these reasons, more body fat is lost when whole body vibration training is added to a diet or exercise regimen than when programs are done by itself or together, two or more times per week.

Both studies — one in Belgium and the other in the United States — were done on patients and volunteers in peer-reviewed journals.

In the Belgian study of 70 overweight patients, published last year, doctors looked at the effects of whole body vibration training on visceral fat. Visceral fat is the fat surrounding the organs in the abdomen. Morbidly fat is made up of visceral fat and subcutaneous fat, which lies beneath the skin and the abdominal wall.

The study was randomized into five groups. The first group received a low-calorie diet only. The second did diet and traditional fitness training, including cardiovascular and weight exercises, the third did diet and added a progressive Power Plate machine training programme, while the fourth was the control group.

After six months, the group which did diet and followed a Power Plate fitness regimen showed the largest percentage drop in both weight and visceral fat, followed by the diet and exercise group. Both groups showed a slight increase in visceral fat, while the control group showed no significant change.

In measurements taken at the end of the year-long study, after all participants had returned to their usual lifestyles, the group which exercised on the Power Plate machines was found to have maintained the amount of fat loss and control groups had returned to their initial fat level. The results were similar in the study on 66 postmenopausal women, published in 2009. Compared the effects of no exercise, resistance training only and resistance training with whole body vibration. At the end of eight months, the women who did not exercise gained 1.8 per cent of body fat, while those who did exercise gained 0.2 per cent and those who did both gained 1.3 per cent.

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Standing on a gently vibrating platform for 15 minutes a day can build bone mass and reduce fat in mice, according to a new study. The changes are due to a stem cell in bone marrow that can become muscle, bone or fat. Testing has begun in humans.

Biomedical engineer Clinton Rubin said he didn't start out intending to make lean mice.
"In my scientific heritage, I'm more of a bone head," Rubin said. "I study a bone disease called osteoporosis, or bone-wasting."

But fat and bone are cellular cousins — the same stem cell that's a precursor to bone cells is also a precursor to fat cells.

Rubin said scientists have known for a good long while that bones that get a lot of shaking tend to get larger. Tennis players are a perfect example.

For instance, "Roger Federer would have 35 percent more bone on his playing arm than his non-playing arm," Rubin said.

But even a small amount of vibrating will do.

The theory for why vibrations affect bone mass is that somehow the bone-marrow stem cell senses the motion and begins turning itself into bone to better tolerate the jiggling.

If that theory is true, Rubin thought, then it could have another implication: "If a precursor cell is deciding to become bone, maybe it isn't becoming fat."

So he and his colleagues at the State University of New York in Stony Brook set up an experiment in which they gave two groups of mice identical diets. But one group was put on a gently vibrating platform for 15 minutes a day.

When he measured the body fat of the group that got the daily jiggling, Rubin said, "Sure enough, they had 30 percent, 27 percent, less fat 15 weeks later."

And the mice also had stronger bones, as Rubin reported in the *Proceedings of the National Academy of Sciences*. Scientists are about to launch a similar study in humans. Douglas Kiel works at the Institute for Aging Research at Hebrew Senior Life in Boston, where subjects will soon get 10 minutes of jiggling a day.

"People stand on a platform" that vibrates, Kiel said. "And since we're enrolling seniors, we also have a little bar to grab onto for safety."

Kiel's colleague Mary Bouxsein, of the Beth Israel Deaconess Medical Center in Boston, says the vibrations are quite mild.

"You do feel something," Bouxsein said. "But you're not being, you know, jolted around as if you need to hold on and you might falls off. It's really a quite minor stimulation."

Bouxsein said she and Kiel initially were only hoping the vibrations would improve bone growth. But now they're planning to see if there are any changes in body fat as well. Since she can't feed her subjects identical diets, she doesn't have high hopes for seeing a big difference.

And it's not as if she's opposed to people getting their vibrations by walking, running or something a little more aerobic.

"But if we had something that was, you know, very simple — you stand on this platform for 15 minutes a day and it may improve your musculoskeletal health, as well as cause you to weigh less or have less fat — that's pretty interesting or intriguing," Bouxsein said.
One important thing to note is that the vibrations do not remove fat cells. Rubin said that once fat cells form, they tend to stick around. And vibrating won't get rid of them.

"If you have a fat mouse, in order to get rid of the fat, you need to metabolize it, just as we've all learned," Rubin said. "You need to get those mice out running marathons or pumping iron, or whatever it is that mice do to reduce their fat mass."

Scientists are pretty clear that the techniques for reducing fat mass will work in humans, too.

In Lab Test, Mice Avoid Adding Fat by Standing on a Low-Vibration Platform

Oct. 22, 2007 -- Subtle vibrations may help keep body fat in check, a new study shows.

The study isn't about fat-jiggling gizmos peddled on TV or the Internet. Instead, it's about a platform that vibrates so mildly that it's barely noticeable.

The researchers -- who included C.T. Rubin, PhD, of New York's Stony Brook University -- placed mice on the low-vibration platform for 15 minutes, five days a week, for 15 weeks.

For comparison, Rubin's team put other mice on a platform that didn't vibrate.

All of the mice ate the same amount of food. But the mice in the non-vibration group wound up with bigger torsos at the end of the study.

Why would vibrations affect fat? The answer might lie in stem cells in bone marrow. Certain stem cells in bone marrow can give rise to fat cells. Vibrations may interfere with that process, note Rubin and colleagues, citing further lab tests in mice.

Rubin founded and consults for Juvent Medical Inc., which is developing health products based on the vibration technology.

Rubin and two of his fellow researchers have submitted a provisional patent for the vibration technology.
Vibrate Your Acidic Fat Away!

According to a report that was published last year in the online edition of "Proceedings of the National Academy of Sciences," imperceptible vibrations transmitted through the whole body could help prevent weight gain in mice by removing tissue acidosis and thus inhibiting the production of fat cells to store non-eliminated environmental, dietary and/or metabolic acid.

Staying slim may be as simple as standing still on a whole body vibrational plate, and allowing the vibration to exercise every cell in the body.


In a study led by Clinton Rubin, chair of the department of biomedical engineering at Stony Brook University, in New York, mice that stood on a vibrating platform for 15 minutes daily produced fewer acid bound fat cells than normal. The findings complicate a traditional understanding of weight loss that focuses mainly on metabolism.

Researchers have known for quite a while that mechanical signals can determine the fate of stem cells--undifferentiated cells that divide and become many different types of tissue - in the small intestine. Rubin, who calls himself a "bonehead," led the pack in understanding how bones develop long before he turned his attention to fat. "Mechanical signals are important for stem cells to decide what to be when they grow up," he says.

Bones need mechanical input in order to grow and stay strong.

Studies at NASA have shown that astronauts lose 2.5 percent of their bone density each month they stay in space. On the other hand, athletes, like archers or baseball players, who selectively work one arm or leg, will grow thicker bones on that side of the body.

According to Dr. Robert O. Young, Director of Research at the pH Miracle Living Center, "a stress in the body, whether intentional or not, will cause blood to flow to that area. The increase in blood flow will result in the blood transforming into new bone, muscle, nerve, etc., in response to the stress. This is why a tennis player will have one arm that is being stressed larger than the other arm that is not being stressed."

To solve the problem of bone loss in space, Rubin started experimenting with vibrations. At the Johnson Space Center, in Houston, volunteer test subjects endured 90 days of fully horizontal bed rest, which roughly simulates what the body goes through during zero gravity. Without having to carry the weight of the body, the skeleton loses much of its mass. So Rubin designed a vibrating platform that would recreate some of the strain of weight. For 10 minutes a day, the device gets cranked up to 30 hertz, an imperceptible level of oscillation. The vibrations run up the body through the feet, sending mechanical signals to stem cells in the small intestine. The signals reach these cells in their adolescence, before they differentiate, and encourage them to become blood cells that then become bone cells or something else.

At some point, Rubin asked the question that led him to study fat. "We saw that we could grow bones with these signals," he says. But "if we're growing bone, what aren't we growing?" As he showed in research published last year, the answer is acid bound fat cells.

Rubin used the same device as the one in the NASA study to see if vibrations would have any effect on the weight of mice. Every day, for 15 minutes, the mice were placed on the platform, this time vibrating at 30 Hz. After 12 weeks, the mice had 27.4 percent less fat in their torsos than a control group.
Sixty percent of adult Americans are overweight. One of the best ways to decrease obesity is to increase exercise. Exercise helps you burn more Calories and regulates metabolism by controlling the amount of fatty acids and sugar in the blood. There has been a trend that says the more strenuous the exercise, the greater the impact on the body. Or, in short, the more exercise, the better.

But Dr. Clifford Rosen of the Maine Medical Center Research Institute, in collaboration with Dr. Clinton Rubin of Stony Brook University, has been studying the effects of short periods of low impact exercise on the body, including bone and muscle. Dr. Rosen simulated this exercise in animals by putting mice on a vibrating platform developed by Dr. Clinton Rubin:

![The Rubin Machine (The container on top of each cage is a weight that keeps it from vibrating off the table.)](image)

Because fat cells (Adipocytes) and bone cells come from the same original type of cell, Dr. Rosen and his collaborators hypothesized that this low level of exercise would suppress the differentiation of stem cells into adipocytes. In other words, the vibration would slow down or prevent the basic stem cells from becoming fat cells — instead they would become bone cells.

**What are stem cells?**

Stem cells are vital to scientific research because they can become many different kinds of cells. You may have heard of embryonic stem cells, as their use in scientific research has become controversial. Embryonic stem cells are the cells found in the developing fetus. They will differentiate; that is, they will become brain cells, muscle cells, bone cells, fat cells, or any other type of cell; as embryonic stem cells they have limitless potential.

Embryonic stem cells are optimal for research because researchers can make them into any type of cell they need. Adults, too, have stem cells imbedded among already differentiated cells. Adult stem cells are more limited in what they can become, but they are a critical part of adult bodies. When cells die, stem cells are able to take their place.

**What’s the connection with Dr. Rosen’s work?**

To do these experiments, Dr. Rosen and his team used two groups of mice: one group was put on a vibrating platform every day for 15 weeks, and the other group was not. Each animal’s food and water consumption and body weight were measured daily. After 12 weeks, the researchers measured the amount of fat (lean body mass) in each animal. At the end of the research, the investigators studied tissue samples to compare the composition of cells in the exercised group and the control group. The results show the exercised group, even with this low impact kind of exercise, had fewer fat cells and produced less fat than the animals that were no exercised.
Dr. Rosen also showed that exercised animals had increased bone density compared to the control group. Dr. Rosen had noticed that the mice with increased bone density also had reduced body fat and triglycerides. This led him to another research project to look at the connection between fat cells and bone cells.

To do this, he transplanted bone cells attached to fluorescent proteins into mice. Half the mice were exercised for six weeks, and half the mice were in the control group. By following the fluorescent protein, Dr. Rosen and his collaborators determined that exercise inhibited stem cells from forming fat cells. Instead, these cells formed new bone cells.

The body is continually making new bone, a process called bone remodeling. This process is regulated by the nervous system, through circulating hormones and it is believed to have 4 phases, as shown in the figure below:

Stem cells can become either fat cells or bone cells. The vibration of the mice changed the “fate” of the stem cells. Instead of fat cells, they became bone cells.

**Medical Uses?**
A technology such as the vibrating platform used for mice could have dual applications in humans. First, it could be used to increase the bone density of elderly people to reduce their susceptibility to broken bones. Second, it could be used to increase weight loss in overweight people. Current studies have shown that people who exercise more are thinner and have a faster metabolism.

Strong bones are an important part of leading a healthy life. It is the reason your parents tell you to drink milk; loss of bone density and bone strength is also why the bones of elderly people break much more readily than those of younger people. In a country with increasing rates of obesity and a growing number of old people, this research has the potential to greatly improve the quality of our health and lives.

Dr. Clifford Rosen is a Senior Scientist at Maine Medical Center’s Research Institute and a Professor of Nutrition at the University of Maine in Orono, Maine. He also works as a Senior Staff Scientist at the Jackson Laboratory in Bar Harbor, Maine.
Power Plate® Training Can Reduce Abdominal Fat in Overweight and Obese Adults

Study conclusions:

One of the biggest health issues for obese people is visceral (or abdominal) fat. Visceral fat is the fat tissue between the organs in the abdomen. It is a major health concern because there is a strong correlation between high levels of visceral fat and the incidence of cardiovascular diseases, such as heart disease, hypertension and diabetes.

Method:

The study of Vissers et al. (2009) involved 79 obese adults (61 of whom completed the study), who were randomly divided into 4 groups:

- Group 1 received a hypocaloric (low in calories) diet only program (DIET).
- Group 2 received a hypocaloric diet plus fitness program (cardio and weights exercises) (FITNESS).
- Group 3 received a hypocaloric diet and progressive Power Plate machine program (see figure 1) (Power Plate)
- Group 4 made no changes to their lifestyle (CONTROL).

Each group followed the intervention for six months and had a six month 'no intervention' follow up. The anthropometric data, body composition and metabolic features were measured at three, six and 12 months. One measurement performed was the determination of visceral fat tissue.

In all three intervention groups (DIET, FITNESS and Power Plate) bodyweight decreased significantly, by 5-10%, which is the international standard for a real impact on health, in measurements taken after the 6 intervention months. Only the FITNESS and Power Plate groups managed to maintain their weight loss of 5% or more in the six 'no intervention' months (see figure 1). The Power Plate group even maintained a weight loss of over 10 %. The mean weight in the Power Plate group was 95.2 kg, in which case 10% means that they lost 9.5 kg of their body weight, which is a considerable amount and is regarded to be significant enough to improve health.

The main difference between the Power Plate group and other groups is in the decrease of visceral fat that occurred. As illustrated in figure 2, the Power Plate group lost twice as much visceral fat after six months, when compared to the FITNESS and DIET groups. The decrease in visceral fat also remained at the same level in the Power Plate group after 12 months, while the DIET and FITNESS groups returned to their baseline values after 12 months.

One possible explanation for why the Power Plate group did not return to baseline values as the other groups did after 12 months may be related to the hormonal changes that Power Plate training may cause. An animal study (Rubin et al. 2007) showed that vibration caused the adipogenesis (creation of fat cells) in mice to drop by 27%. Therefore the vibration prevented the creation of new fat cells. The underlying principles of these possible changes in humans aren’t exactly clear yet, but research is currently being conducted into this.
Why did the DIET group lose more visceral fat than the FITNESS group?

The FITNESS group used more calories than the DIET group, because of their extra fitness training. During and up to 24 hours after fitness training, the human body needs energy, which is called the ‘after-burning’ effect. To get that energy, the human body will burn the ‘easy’ fat tissue (such as the subcutaneous fat) first. This means more subcutaneous fat is burned, rather than visceral fat.
Why did the CONTROL group lose visceral fat tissue over the next six months?

This is most likely due to the fact that the CONTROL group knew they were involved in a study which would involve their weight and fat tissue being measured after the first six months. This may cause them to change their lifestyle, such as eating more healthily or eating smaller meals, which would result in a minor decrease in visceral fat tissue, although not of any great significance. In the second six month phase of the study, the group could be aware that the others being tested were not doing any interventions, so they would feel comfortable in adopting their previous lifestyle, or perhaps adopting even more unhealthy habits, resulting in an increase in visceral fat tissue.

Practical Applications:

Many obese or overweight people find it difficult to start an exercise routine, as the common fitness options, such as the gym, are too difficult or demanding, or they may feel embarrassed by their own bodies and their low fitness level. For obese or overweight people, Power Plate could be the ideal introduction to exercise.

Power Plate offers several advantages. Whole body vibration exercise is low-impact; reducing strain on the joints, especially while doing static exercises. Also the time needed to complete a workout is much shorter on Power Plate. The average time for traditional fitness training is approximately 60 minutes or more, while the average time for a Power Plate session in this particular study was 30 minutes.

Study Conclusion:

Adding Power Plate training to a hypocaloric diet can help to achieve a SUSTAINED LONG TERM WEIGHT LOSS and can reduce visceral adipose tissue in obese adults MORE than aerobic exercise alone.

Blasting Fat with Ultrasound

August 18, 2004

By Amy Tsao Medical advances have increased the options for changing body contours. But whether one chooses liposuction -- in which unwanted fat cells are removed from the body -- or a procedure like a tummy tuck -- in which loose skin and fat are removed from the stomach area -- there's no getting around going under the knife.

That could change, however. Research is now being done on using high-intensity ultrasound to take the surgery out of these kinds of plastic surgery. "This technology could be revolutionary," says Peter Fodor, president of the American Society for Aesthetic Plastic Surgery (ASAPS). "In a noninvasive manner, you will accomplish what
we do with liposuction." (Fodor is on the advisory board at LipoSonix, a startup based in Bothell, Wash., that's developing a fat-busting ultrasound device. He says he receives no financial compensation for his services.)

LOOSEN THE LARD. The prospect of noninvasive fat removal is certainly intriguing -- and not just to doctors and prospective patients. Liposuction is the second-most popular of all cosmetic-surgery procedures (breast augmentation is first), according to ASAPS. In 2003, Americans spent $711 million on liposuction. Little wonder that LipoSonix raised $27 million from venture capitalists last month.

The idea that ultrasound can break down fat cells has its merits. With the LipoSonix approach, ultrasound would be delivered through the skin using a wand-like device. The ultrasound would break down fat, and the busted-up fat cells would be metabolized and excreted by the body instead of suctioned out, as it is in liposuction.

Some plastic surgeons use ultrasound during liposuction to help loosen up fat cells before they're suctioned. And experts agree that high-intensity ultrasound has become advanced enough that it would allow doctors to target fat tissue at the cellular level. "They can be very precise," says Larry Crum, director of the University of Washington's Center for Industrial and Medical Ultrasound. "It can be focused down to a grain of rice."

LOW-RISK. Still, for all of its potential appeal, ultrasound fat reduction has to be put into perspective. Intense ultrasound won't likely achieve the same level of fat reduction as liposuction. "You could take out a few ounces with each [ultrasound] treatment," Crum figures. "But in conventional liposuction, you are taking kilograms at a time." The technology would probably be most beneficial to people looking to sculpt an inch or two.

Jens Quistgaard, CEO of LipoSonix, nevertheless believes a significant market will develop for such procedures. "This is not going to replace liposuction," he says. "It may well provide an alternative for some people, who wouldn't choose surgery. They perhaps would have our procedure."

Far more testing will be needed before the treatment is available on the market. LipoSonix says it has tested its device, which it calls SonoSculpt, on 30 patients in Mexico. "Safety data came back really good," says Quistgaard.
PROBLEM SOLVED? The biggest question is: Can the body safely get rid of the broken-down fat cells? "If you had a lot of fat passing through the body, that probably wouldn't be a good thing," Crum says. "It's very unnatural to remove two to three ounces of material that has suddenly died." If the technology is approved for fat removal, the Food & Drug Administration will likely recommend a limit on how much fat can be removed in a single treatment, Crum predicts.

LipoSonix claims to have developed a way to address the issue of the zapped fat cells being metabolized, though for competitive reasons, Quistgaard would not elaborate. "We agree that having the body eliminate this tissue would be difficult to do," he says. "But I think we have solved it." Quistgaard figures a person could safely metabolize fat cells treated in one SonoSculpt session in four to six weeks. New data in humans will be available a year from now, he says.

Regardless of high-frequency ultrasound's efficacy for removing fat, researchers think it will ultimately have therapeutic and medical applications. "It's unfortunate that some of the early uses of this tremendous technology are for body sculpturing rather than solving bigger problems like cancer," says Crum.

COMBO TREATMENT. Researchers are now testing ultrasound's ability to remove tumors. In June, an FDA panel recommended approval of a device combining magnetic resonance imaging (MRI) and ultrasound for treatment of uterine fibroids -- an often-painful condition in which benign tumors grow on the lining of the uterus. The device's manufacturer, InSightec, is also testing the MRI-ultrasound device in destroying breast-cancer tumors.

Utrasound is already commonly used in diagnosing various conditions. Now, the hope is that high-intensity ultrasound can have an even bigger impact. If that proves to be the case, companies like LipoSonix and InSightec could end up in fat city. Tsao is a reporter of BusinessWeek Online in New York.
Fat zappers really work: A new wave of slimming gizmos is actually delivering results

- The 'real deal' fat-busting treatments and gadgets are put to the test

By LEAH HARDY FOR MAILONLINE

PUBLISHED: 21:00 GMT, 29 June 2013 | UPDATED: 15:25 GMT, 2 July 2013

After years of dubious promises of smaller waists and slimmer thighs, a new generation of fat busting techniques and gizmos have made it onto the market - and these actually work:

THE SIX PACK SCULPTOR

Butter would melt: A MELT diode laser machine

WHAT MELT (Medical Energies Lipo Tightening) uses Low Level Laser Therapy (LLLT) to collapse fat cells, so they expel their contents. Ultrasound, radiofrequency (RF) and magnetic waves tighten skin.

A treatment takes ten to 20 minutes. Five sessions are recommended.
COST £250 per session. beautyworkswest.com; www.drdanielsister.com

PROOF There is no proof of the effectiveness of this particular combination treatment, however, ultrasound and RF have been extensively studied and were found effective. Studies indicate it’s possible to lose between one and two inches in a single treatment.

WHAT’S IT REALLY LIKE?

Writer Martin Dunbar, 43, from London had his stomach and flanks treated. He says: ‘At 6ft3ins, I was in 34in trousers, but I measured almost 38in around my belly button.

'It involved brick-sized plastic boxes strapped to my waist for ten minutes. You feel a localised warm tingle. I had six treatments. When my waistband began to feel looser I was stunned. I'm now in 32in trousers.

**BEFORE: Waist 37.7in. AFTER: 35.6in. LOSS: 2.1in.**

THE THIGH SHAPER

WHAT 3D-Lipo combines ultrasound and radio frequency to tighten skin with a vacuum roller to tighten and reduce cellulite and drain fluids and fat from the lymphatic system. Eight hour-long sessions, one week apart, are recommended. Results may be seen immediately.

A single 45-minute cryolipolysis freezing treatment – similar to the one Made in Chelsea's Binky Felstead had may also be given. She had LoveLites’s Lipoglaze and lost two inches from her waist after a single session. Final results are seen six months after first treatment.
Success story: Made in Chelsea's Binky Felstead receives LoveLite's Lipoglaze treatment and lost two inches from her waist after a single session

PROOF While the individual components of the treatment have been tested and found to be effective, there are no studies supporting this particular combination. But 80 clinics use it and report it as effective.

COST Skin tightening treatment to one area costs £200 for 60 minutes. A course of eight treatments costs £1,200. Cryolipolysis starts at £300 per area. jillzander.co.uk

Binky went to LoveLite for her lipoglaze treatment. 144 Harley Street, London, W1G 7LE Tel: 0845 505 0805. loveliteuk.co.uk

SO, IT’S EFFECTIVE - BUT IS IT SAFE?

Q If there are no incisions . . . where does the fat go?
A In LLLT, oil is released from fat cells, shrinking them without destroying them. This oil is then absorbed by the lymphatic system, transported to the liver, and excreted in the same way as fat from the diet.

Q How do we know it doesn’t stay in the blood?
A Studies of patients who underwent the treatment had their blood tested. It showed there was no rise in fat levels – including cholesterol – in the blood.

Q Is there a downside?
A If fat cells are not destroyed, they can ‘fill up’ again if you continue to over-eat and put on weight.

Q Which treatments are permanent?
A CoolSculpting is the only approved and safety-tested freezing treatment that destroys fat cells, bringing about permanent reduction of fat in treated areas. Some types of ultrasound treatment, such as Liposonix, also do this while others don’t.

Q With traditional liposuction, some studies said you put on more weight in other areas?
A This has now been debunked. It merely appeared to be the case because once fat cells were destroyed, people had proportionally less is some areas than others, and put on weight unevenly.

Q Why is it so expensive?
A The machines are new and can cost hundreds of thousands of pounds, and have parts that need regular replacement. A higher price should be reassuring: there are low-cost imitators which simply do not work. In all cases, ask about FDA approval, a benchmark of quality.

Q Is there anyone who can’t have it?
A Yes, those with liver disease, long-term illness, pregnant women, those with skin disease or problems with healing. A practitioner should take a full medical history before any treatment is given.

WHAT’S IT REALLY LIKE?

Elizabeth Summerhaze, 42, a writer from Surrey had her knees treated.

She says: ‘I was told this was good for stubborn fat that no amount of dieting or exercise will get rid of – I thought of my knees!

'Specifically the areas on the inside, just above. Mine bulged out. It sounds silly but I never wore anything that showed them.
The first treatment is the ultrasound which is delivered by a handheld probe, like the one they use on pregnant women.

'It gets quite hot, but it's not painful. Oddly, you hear a high pitched whining in your ears.

'On the next appointment, I had the freezing treatment.

Afterwards, the area felt like a bag of ice defrosting. It hurt for the rest of the day and was quite bruised.

'I noticed a difference immediately and the results have gradually improved over the last two months.

'It's changed the way I dress: I will now happily go bare-legged with skirts, and I wore shorts on holiday for the first time in years. The painful part is the price – but it was worth it.

BEFORE: Right knee 16.1in; left 16.5in. AFTER: Right knee 14.9in; left 15.3in. LOSS: 1.2in.

BUDGET BELLY BUSTER

WHAT Med Contour uses a handpiece that emits a double beam of low frequency ultrasound energy.

The combination of heat and soundwaves causes the targeted fat cells to burst.

Lymphatic drainage massage is carried out afterwards and again a few days later to help the body process the released liquid fat.

Between four and ten sessions are recommended for lasting results.

COST £149 per session. A course of ten is £975. med-contour.co.uk

PROOF One study indicated that after one treatment patients saw an average reduction of 0.8in from the abdomen.

After four treatments the loss was 2in from the abdomen and 1in from each thigh. Currently it is cleared by America’s Food and Drug Administration (FDA) only for relief of minor muscle aches, pain and muscle spasms, temporary improvement in blood circulation, and temporary reduction in the appearance of cellulite.

WHAT'S IT REALLY LIKE? Verma Kishan, 52, a transplant surgeon from Newcastle, had his stomach and flanks treated: 'My job means regular exercise is difficult, and I tend to go for long periods without eating, then wolf down whatever is at hand.
Clear results: Verma Kishan, 52, from Newcastle, lost 2.5 inches from his stomach and flanks after Med Contour treatments

‘At 5ft 6in and a waist of 34in I was overweight. I was aware of things such as liposuction but they have risks and I couldn’t afford the downtime. This non-invasive option was attractive because it’s risk-free. During the session, the therapist used a sucking hand-piece a few inches in diameter. It felt warm and tingled a bit.

The massage is done with a separate sucking machine, and is very gentle. The result was like a magic trick. After one session I was 2.5in smaller round the middle. Since having the procedure I have regained about an inch, but I was squeezing back into my old 32in trousers for a while so I’m going to have some more treatments.

BEFORE: 38.1in. AFTER: 35.6in. LOSS: 2.5in.

THE BLOB BANISHER

Banish and bust: Liposonix uses ultrasound waves destroy fat cells permanently

WHAT Liposonix using High-Intensity Focused Ultrasound (HIFU). The waves deliver strong pressure that destroy fat cells permanently.

Liquid fat released is processed via the liver as if it is from food and removed by the immune system.

Results of a single 90 minute session seen in 12 weeks, after which the same area can be retreated.

COST £1,800 per session. 111harleystreet.com
Proof shown to work in randomised, double blind trials. Studies show between 1in and 1.8in reduction from the waist.

Also tightens skin. Approved the US safety watchdog the Food and Drug Administration (FDA) for reduction of the abdomen and flanks (love handles). Because fat cells are destroyed it may be permanent.

What's it really like? Matthew Hardy, 33, an accountant from London had his stomach and flanks treated.

He says: 'At 5ft 8in and around 11 stone and with a waist size of 32in I don't have a big problem with my weight. I go to the gym, swim and eat fairly well although I don't say no to an occasional take-away.

'Since turning 30, I have felt wobbly around the middle and my trousers are tight – depressingly, exercise seems to have no effect. I have a ‘blob’ on my stomach that nothing will shift. 'During the treatment they put a probe a bit like a space-age shower-head on the areas they're blasting. At its mildest, it felt like a nagging scratching just beneath the skin, but in some areas this intensified to an unbearable stabbing pain and I had to take a few breaks.

'It felt sore to the touch for at least six weeks afterwards. After two months I noticed I was no longer spilling over my waist-band, and, joy of joy the blob is gone. It's a small victory – but I'm incredibly pleased.'


The Fat Freezer

What CoolSculpting is the original form of cryolipolysis. Areas are sucked into a handpiece and cooled so fat cells freeze, die and are excreted.

One session is needed, but can be repeated after 12 weeks. Each treatment takes an hour. Results seen from around three weeks.

Cost £800 per area. cosmeticskinclinic.com.
Chilling effect: 'Fat' areas are sucked into a handpiece and cooled so fat cells freeze, die and are excreted

PROOF Studies prove patients lose an average of 25 per cent of the fat layer in the treated area and that it is very safe.

The more fat there is, the more you lose. Dr Tracy Mountford of The Cosmetic Skin Clinic, says she regularly sees a 40 per cent reduction. Results are lasting.

WHAT’S IT REALLY LIKE? Lisa Carling, 49, from London, had her stomach and flanks treated. She says: 'I’m 5ft 8in and had always had a hour-glass shape.

'After a back injury left me unable to exercise, I wasn’t any heavier but my old size 10 waist was now a 14 to 16.

'A vacuum unit was placed over my tummy and sucked in my flab, which made me gasp. The nurse said the fat was ‘perfect for good results’.

'Afterwards, the area was numb and almost rock hard. A vigorous massage then broke up the ice crystals. I had cramping for a week, plus swelling and bruising for a few weeks.

'Then I started to see my middle shrinking. After 12 weeks, I’d lost three inches and friends started saying I looked skinny.

BEFORE: Waist 34.2in. AFTER: Waist 31.1in. LOSS: 3.1in.

THE RED HOT POKER

WHAT Zerona uses Low Level Laser Therapy (LLLT) that ‘pokes’ temporary holes in the walls of fat cells, causing them to collapse. The expelled liquid fat is used as energy or processed via the liver.

So comfortable, manufacturers say it is normal to sleep through the process. Six 40 minute treatments are required, every other day for two weeks. Takes at least four treatments.
In the hot seat: A patient receives Low Level Laser Therapy from Zerona

**PROOF** In double-blind studies waists, hips and thighs were reduced by about an inch. Some doctors believe the process triggers a fat reduction throughout the body. FDA cleared. But two weeks later patients regained an average 0.31in.

**COST** From £900-£1,500. lbps.co.uk

**WHAT'S IT REALLY LIKE?** Hannah O'Kelly, 29, from Birmingham, had her stomach and flanks treated. She says: 'I'm usually a size eight but fluctuate to the extent that I sometimes can't do up my trousers.

'I do lose weight easily if I exercise, but never have time. There's a last wobbly bit on the front of my tummy which I long to be rid of.

You wear sunglasses as they beam red lights at your fat bits while you lie down for 20 minutes on the front and the same on the back. I had five treatments, each a week apart. Afterwards my tummy was almost gone.

**BEFORE:** Waist 27in. **AFTER:** Waist 26.2in. **LOSS:** 0.8in.
What is Cavitation Instant Fat Loss & what can it do for me?

Cavitation is body sculpting with no anesthesia, no scars, no down-time and presents a risk-free alternative to liposuction. The result is instant loss of fat cells. Cavitation is a natural phenomenon based on low radio frequency ultrasound. The low radio frequency ultrasound field creates the bubbles in the liquid, which gradually grow, and implode at certain size. The energy in the form of heat (minor effect) and pressure wave (major effect) is released. As the membranes of fat cells do not have the structural capacity to withstand the vibrations, the effect of cavitation easily breaks them, while sparing the vascular, nervous and muscular tissue. The result is instant fat loss.

What Happens to the Released Fat?

After disruption of adipose cells, the fat in the form of triglycerides is released into the interstitial fluid between the cells, where they are enzymatically metabolized to glycerol and free fatty acids. Water soluble glycerol is absorbed by the circulatory system and used as the energy source, whereas the insoluble free fatty acids are transported to the liver and processed as fatty acids from food.

What Will I Feel During the Instant Fat Loss Treatment?

The treatment does not require anesthesia. Most of the clients consider the procedure painless and comfortable. There may be, however, a slight discomfort due to the specific noise spreading inside your body, but it poses no harm and disappears as soon as you are not in contact with the applicator. You may also experience a little warmth during the treatment. If it turns burning hot, immediately request some extra lipo-sculpt gel to be applied. If adding skin tightening you may experience some slight discomfort due to the suction of the vacuum.

Can I Expect Any Side Effects?

There is a slight possibility of mild side effects such as transient redness, excessive thirst, and nausea immediately after the treatment which always resolves by drinking water. They are all short-term effects that disappear in few hours to few days. Even though the studies have proven the treatment safe, the cavitation is not be used in clients with an acute illness, comprised liver function, severe bleeding tendencies, pace makers, or during pregnancy.

What Are the Expected Instant Fat Loss Treatment Results?

The cavitation treatment yields immediate and long lasting results. Most of the clients experience 2 to 10 cm of circumference reduction after a single session with increasing results after each visit. The results may vary with different tissue structure, treatment area, age, metabolism, medications, and changes in hormones. Proper diet and increased physical activity will certainly improve and help to maintain the results.
How many sessions are needed to see results?
Since the first session, you will decrease your measurements. Research has shown that most patients require 6-12 sessions to achieve optimal results. This will depend on the size of area to be treated and the desired result.

How often do you perform Lipo-Sculpt Cavitation therapy?
Lipo-Sculpt Cavitation therapy can be performed up to 3 times per week, safely. If getting skin tightening with Lipo-Sculpt Cavitation therapy this can be performed once a week due to swelling and bruising.