

# 6 Ways to Shrink Your Belly (And 5 Don't Include Exercise!)

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By Dr. Mercola

If you're looking to shrink and tone your belly, there's a better way to do it than trying to do crunches. In fact, research has shown that doing abdominal exercises alone—even when performed five days a week for six weeks—has no effect at all on subcutaneous fat stores and abdominal circumference.

In an op-ed piece for *Forbes Magazine*, Jennifer Cohen suggests using strategies that burn up cortisol instead. Cortisol is a hormone in your body that depletes lean muscle and holds on to fat in the abdominal region.

One of the most important ways to help this process is to reduce stress in your life, because stress causes cortisol levels to spike. Cohen also delves into a number of other strategies that help reduce your cortisol levels, such as the following. To learn more, please see the featured *Forbes* article:

Getting enough sleep	Reducing or eliminating refined sugars from your diet	Slowing down your breathing
Doing short bursts of exercise (high-intensity interval training)	Supplementing with vitamin C	Eating fats—the good kinds such as the omega 3's found in salmon, avocados and walnuts

## The KEY Strategy for Reducing Belly Fat

Cohen certainly brings up some good points. Getting sufficient amounts of sleep, for example, not only helps normalize cortisol levels, it's also important in order to optimize your circadian clock, which can have a profound impact on your metabolism and weight. As an example, a couple of years ago researchers at the University of Chicago found that dieters who slept for 8.5 hours lost 55 percent more body fat over the course of two weeks than dieters who only got 5.5 hours of sleep a night.<sup>iii</sup>

But the master key really lies with your diet, followed closely by the type of exercise you engage in.

About 80 percent of your ability to reduce excess body fat is determined by what you eat, with the other 20 percent related to exercise and other healthy lifestyle habits such as sleep and stress reduction. What this means is that if your diet is based on sugar/fructose and processed junk food, your chances of getting flat, ripped abs, even if you work out religiously, are quite slim...

You simply will not see defined abs unless you reduce your overall body fat, and a poor diet cause your body to hold on to excess fat, despite all your exercise efforts. Cohen mentions two of the most important dietary factors in her article, namely:

- **Reducing or eliminating sugar from your diet.** This includes ALL forms of sugar and [fructose](#), whether refined or "all-natural" such as agave or honey, as well as all grains (including organic ones), as they quickly break down to sugar in your body
- **Increasing [healthful fats](#) in your diet**, such as healthy saturated fats and animal-based omega-3's

One of the most pernicious dietary influences on your weight loss goals is fructose, which hides in so many processed foods and beverages, it can be near impossible to avoid unless you alter your shopping and cooking habits. By avoiding processed foods in general, and focusing instead on whole, preferably locally grown organic foods, cooked at home, you can circumvent one of the greatest dietary obstacles there is today.

For more details, I suggest you review my [Optimized Nutrition Plan](#), which is a comprehensive and step-by-step guide to help you make health-promoting food- and lifestyle choices. This includes:

Limit your fructose to less than 25 grams per day, and, ideally to less than 15 grams per day, as you're likely consuming 'hidden' fructose if you eat processed foods or sweetened beverages	Limit or eliminate all processed foods	Eliminate all gluten, and highly allergenic foods from your diet
Increase the amount of fresh vegetables in your diet, and consider juicing	Eat at least one-third of your food uncooked (raw), or as much as you can manage	Avoid <a href="#">artificial sweeteners</a> of all kinds

### **The Primary, and the Most Surprising, Dietary Offenders**

Fructose, primarily in the form of high fructose corn syrup hidden in processed foods and beverages is the primary contributing factor to widespread and seemingly out-of-control obesity. The top offenders in this category include:

Grain-based desserts (cakes, cookies, donuts, pies, crisps, cobblers, and granola bars)	Soda, energy drinks, and sports drinks
Breads	Juice drinks and fruit punches
Breakfast cereals	Fast food and pre-packaged dinners
Prepackaged, processed lunches	Coffee drinks

There are also a number of foods that are typically considered healthy that you might not suspect would contribute to your weight problem. But while considered "healthy" by the mainstream, these foods are actually *loaded* with sugar and/or fructose:

Yoghurt	Condiments, sauces, and salad dressings
High-fructose fruits: apples, pears, grapes, watermelon, persimmon, and mango	"Diet" foods and snacks
Dried fruits: raisins, figs, apricots	Infant formula
Enhanced waters (such as VitaminWater)	Jarred baby foods and teething biscuits

## What's the Best Fat-Busting Exercise?

Once you've addressed your diet, exercise can truly begin to work its magic on your physique, and help boost fat loss even further. The trick to achieve flat abs is to incorporate the *correct types* of exercises.

[High-intensity interval exercises](#) are at the core of my [Peak Fitness](#) routine. This short intense training protocol improves muscle energy utilization and expenditure due to its positive effects on increasing muscle mass and improving muscle fiber quality. Muscle tissue burns three to five times more energy than fat tissues, so as you gain muscle, your metabolic rate increases, which allows you to burn *more* calories, even when you're sleeping. Further, several studies have confirmed that exercising in shorter bursts with rest periods in between burns more fat than exercising continuously for an entire session.

In fact, you can actually lose more weight by reducing the amount of time you spend on exercise, because when doing high-intensity interval training you only need 20 minutes, two to three times a week. Any more and you'll overdo it! You can get the details on how to properly perform these exercises in the video below.

## Next: Exercises that Target Your Abs

While ab workouts specifically may not help you reduce body fat, they still provide important benefits and should not be overlooked. Your abdominals are part of your body's 29 core muscles, which are located mostly in your back, abdomen and pelvis. This group of muscles provides the foundation for movement throughout your entire body, and strengthening them can help protect and support your back, make your spine and body less prone to injury and help you gain greater balance and stability.

When you build your ab muscles, it's like developing an internal corset that holds your gut in. By doing so, you help stabilize your spine, vertebrae and discs, which in turn can significantly reduce back pain and make it easier for you to lift heavy items, twist and turn and perform the movements required for a full life. Having a strong abdominal wall is very important for optimal body movement and gets increasingly more important with advancing age.

A strong abdominal wall is also what will produce that six-pack look once you've lost sufficient amounts of subcutaneous fat. However, conventional crunches and sit-ups are not the most effective when it comes to creating flat, well-defined abs.

In order to effectively train your [core muscles](#), you must incorporate a variety of stabilization, functional and traditional exercises. A study by Petrofsky (2007) actually put this to the test by researching how much muscle activity is generated by different abdominal exercises. The simple, traditional abdominal floor crunch was found to produce and recruit the *least* amount of muscle activity when subjects were attached to an electromyography (EMG) machine! That's not to say that you should never perform a traditional abdominal crunch; but this particular exercise should be done as part of a varied core-strengthening routine.

This may include:

- Traditional exercises, such as a standard crunch with rotation or a standing rotation with a light hand weight.
- Functional exercises, including work on a stability ball.
- Stabilizing exercises, such as lying on the floor and pulling your belly back toward your spine and holding that position while breathing deeply
- Extension exercises, such as lying on your stomach with arms extended above your head. Then raising both arms and both legs, at the same time, off the floor. (Hold for a count of 5, or 5 breaths, and slowly return to the floor.)

Popular exercise programs that work your core muscles are widely available, and include virtually all the types of yoga and Pilates. But there's yet another exercise you might not have thought of: [push-ups](#)! That's right. Push-ups don't just give you a stronger upper body, they also train your abdominals—as long as you're doing them correctly. I recommend watching Darin Steen's demonstration of the proper form below, but I've also included a summary of key points to remember:

- Keep your body stiff and straight as a plank
- Elbows at a 45-degree angle from your sides
- Breathe in on the way down
- Lower your body all the way down
- Breathe out on the way up

If you're looking to get rock-hard abs, remember that proper dietary choices is your first step, but from there a comprehensive fitness program and targeted ab exercises will help you achieve your goal.

## References:

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- <sup>i</sup> [Journal of Strength and Conditioning Research July 28, 2011](#)
  - <sup>ii</sup> [Forbes March 27, 2012](#)
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# Shake and Keep Off Unwanted Belly Flab 54% Better Than Aerobics

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By Dr. Mercola

A type of exercise that doesn't get much attention, but can provide truly impressive health benefits, is Whole Body Vibrational Training (WBVT), also known as Acceleration Training.

The exercise is done using a platform that vibrates in three-dimensions, or three planes: vertical, horizontal and sagittal (front to back).

The vibrations force your muscles to accommodate, resulting in dramatic improvement in strength, power, flexibility, balance, tone and leanness.

Other health benefits of whole body vibration training include:

- Increased weight loss
- Increased circulation
- Increased lymphatic drainage
- Cellulite reduction
- Increased hormone secretion: IGF-1, testosterone, and HGH (human growth hormone)

## Can You "Shake Off" Excess Weight?

While it may sound like wishful thinking, research has shown that whole body vibrational training is remarkably effective when it comes to shedding excess weight. One study, published in the journal *Maturitas* in 2009, found that vibrational training in conjunction with resistance training altered the body composition of postmenopausal women by successfully decreasing body fat.

Another study at the University of Antwerp in Belgium, published two years ago, found that the vibrational training was 54 percent more effective than traditional aerobics and strength training in producing visceral fat loss—the type of fat that tends to accumulate around your internal organs, associated with heart disease, high blood pressure and diabetes.

Furthermore, those who used vibrational training were far less likely to gain the weight back. The study included 79 obese adults (61 of whom completed the full trial). The study consisted of six months of intervention, plus a follow up at the 12-month mark to see if the weight loss had been sustained. The participants were randomly divided into four groups:

- Group 1 received a low-calorie diet only program
- Group 2 received a low-calorie diet plus conventional fitness program of cardio and weights exercises
- Group 3 received a low-calorie diet and progressive whole body vibrational training program
- Group 4—the control group—made no changes to their lifestyle

Those using a combination of vibration training and a low calorie diet **lost twice as much visceral fat** in six months as those following a low calorie diet with traditional cardio and weight training. Interestingly, the fat loss they achieved remained steady in the vibration group after 12 months, whereas the other diet and exercise groups returned to their normal baseline levels once the intervention ceased.

The researchers suggested that the maintenance of visceral fat loss in the Acceleration Training group might be related to hormonal changes—specifically, increased production of human growth hormone (HGH). As I've explained in previous articles, [HGH](#) is a synergistic, foundational biochemical underpinning that promotes muscle and effectively burns excessive fat. It also plays an important part in promoting overall health and longevity.

Overall, this study suggests that Acceleration Training holds great promise for helping you achieve **and sustain** long-term weight loss and reduce potentially dangerous visceral fat. In conclusion, the authors stated:

*"Combining aerobic exercise or whole body vibration (WBV) training with caloric restriction can help to achieve a sustained long-term weight loss of 5-10 percent. These preliminary data show that WBV training may have the potential to reduce visceral adipose tissue more than aerobic exercise in obese adults, possibly making it a meaningful addition to future weight loss programs."*

## **Banish Unsightly Cellulite with Vibrational Training**

Cellulite is a common problem for women of all ages. Here too, vibrational training has been shown to be effective. In a German six-month long research project into the effects of Acceleration Training on cellulite<sup>iii</sup>, 55 subjects were divided into two groups:

1. One group did Whole Body Vibrational Training for 8-13 minutes, two to three times a week
2. The second group performed the identical vibrational exercise, plus another 24-48 minutes of cardio training, two to three times a week

Baseline measurements were collected at the beginning of the study, and repeated six months later. The data collected included:

- Skin condition (the measure of cellulite or evaluation of the deposits of dimpled fat under the skin).
- Circumference of calf muscles, buttocks, and upper thigh.
- Body composition: body fat percentage, lean mass percentage.

After six months, the Whole Body Vibrational training group only had a cellulite reduction of just below 26 percent, while the WBV plus cardio group had a cellulite reduction of just over 32 percent. The authors concluded:

*"This study proves that easy, simple and efficient whole body vibration training can defeat cellulite; it can accelerate and enhance collagen remodeling, improve circulation, increase lean tissue, help people to lose fat and reduce the size of buttocks, thighs and calves."*

## Other Health Benefits of Whole Body Vibration Exercise

Two additional health benefits I want to address here are:

- Improved blood flow and circulation, and
- Increased HGH production

The former plays a key role in tissue healing, making it a particularly helpful adjunct when you're recovering from an injury. A 2007 study published in the *Medical Science Monitor*<sup>®</sup> found that just three minutes of massage on a Whole Body Vibrational machine doubles the mean circulation for a minimum of 10 minutes. According to the authors:

*"The emerging therapeutic modality of Whole Body Vibration as a passive intervention appears to increase circulation in individuals with healthy microcirculation."*

Perhaps one of the most important health benefits of Acceleration Training though is its beneficial impact on your hormonal secretions, including human growth hormone (HGH), aka "the fitness hormone." The higher your HGH serum level, the healthier, leaner and stronger you will be, and the vibrations of the acceleration machine activate the fast and super-fast muscle fibers throughout your body, which promotes the release of [exercise-induced growth hormones](#) at levels that actually mimic taking HGH injections!

HGH declines rapidly after age 21, and once you reach 30, you start to enter into what's called somatopause when your metabolism really starts to slow down. The amount of HGH you secrete also depends on how much lean body mass and belly fat you have. The more belly fat you have, the less HGH your body produces. Therefore, one major goal of any fitness program should be getting your body to pump up its HGH production, either through high-intensity interval training, such as [Peak Fitness](#), or Acceleration Training.

What's truly exceptional about Acceleration Training technology is, it engages up to **98 percent of your muscle fibers**—including the fast and super-fast muscle fibers. So, with Whole Body Vibrational training, you get greater rewards and shorter workouts because you're working muscle fibers *every second*. So, how exactly does Acceleration Training work? Read on...

## The Mechanics of Acceleration Training

As it relates to your workout, you can think of **force** as the amount of work done. In order to benefit from your workout, you must increase the forces on your body by increasing one of the two variables, **mass** or **acceleration**: To understand how Acceleration Training works your body, you need to familiarize yourself with Newton's simple but powerful Second Law:

$$F = M \times A$$

*The **force (F)** on an object is a function of its **mass (M)** and its **acceleration (F)**.*

1. When you lift weights, you're **increasing mass** (the mass of your body plus any weights you use).

2. Acceleration Training **increases acceleration**. The vibrations are actually very rapid small movements of the platform—mainly up and down. The changes of directions of the platform result in strong acceleration and decelerating forces, 25 to 50 times per second. The mass is simply your body, and vibration is the acceleration.

By increasing either (or both) of these variables, you increase the amount of force on your body, which is what puts the "work" into your workout. Gravity is another form of acceleration. It causes your muscles to develop in response to the effects of gravity, so that you can move. (If Earth had no gravity, you wouldn't develop muscles. That's why astronauts *lose* significant muscle mass in space.). Vibration adds more GRAVITY to your body, effectively increasing "G forces."

A high quality Acceleration Training machine can generate forces from two to six Gs depending on the frequency and amplitude settings used. Combinations of these frequencies and amplitudes make it possible for six force/intensity settings, which effectively apply between 1.0 G and 6.4 G forces to your body. So, even at the lowest setting, you are almost doubling your body weight in terms of applied forces:

- Frequency settings typically range from 25 Hertz to 50 Hertz (cycles per second).
- Amplitude refers to how far the plate moves during each cycle, which typically ranges from 1 mm (low) to 2 mm (high).

As mentioned at the beginning, high quality Acceleration Training machines vibrate in three planes: vertical, horizontal and front to back. When you stand on the vibrating platform, each muscle in your body reacts in a continuous flow of micro adjustments, contracting reflexively. The up-and-down movement improves your muscle tone. The left-to-right, and front-to-back movements improve your balance and coordination. The net result is a dramatic improvement in strength and power, flexibility, balance, tone and leanness.

Consider this: If you apply 30 Hertz (30 cycles per second) for 30 seconds, you are triggering/stimulating your neuromuscular system a total of *900 times in just half a minute*. This means you can train to athlete status with about 12-25 minutes of Acceleration Training, three days a week.

No wonder the results are so impressive!

### **Buyer Beware: Not All Acceleration Equipment are Created Equal...**

There are many cheap machines out there so please understand that not all machines will provide identical benefits. In fact, cheap machines using faulty construction could cause harm. In my opinion, here's what you want to look for when shopping for Acceleration (or Whole Body Vibration) Training equipment:

- Solid steel construction. Avoid plastic platforms as they can and do break. Watch for sturdiness as you watch their demo video.
- Optional vibration settings and the convenience of automatic programs. You may want to challenge your body and increase the vibration setting.
- Adequate weight limit. If it can't handle your weight, it can break or strain to run at a lower intensity level.
- Who is selling the equipment? Know the company and their reputation.

- How loud is it? Many machines are excessively noisy which can contribute to psychological stress.
- Does the company provide a detailed guide and user manual? A video demonstration can be very helpful to learn recommended exercise positions.
- A good warranty and customer service in case you have questions. How long has the company been around? Will they be around long enough to honor their warranty?
- Beware of fake ratings. For example, it appears that the "Koehler Rating" may be fabricated. Don't fall for this type of marketing gimmick.

Be sure to take your time and check the fine print when shopping for Acceleration Training equipment. In my opinion, a reliable, well-built machine is truly a great investment that you'll appreciate for many years to come. Try to demo the machine you're interested. Notice how you feel when you step off. If you don't feel good afterwards, that's a red flag that the machine's vibrations may not be in tune with your body's natural frequencies.

Some foreign-made vibrating equipment is particularly poor with faulty electronics, buttons, cheap bearings and shoddy welds that commonly break. Beware of skinny support posts, unstable units, too small-sized plates, weak motors and units with insufficient power to support the vibration capacity.

With some Whole Body Vibration machines, you may experience a side-to-side type of motion – a "wobble board" effect. Avoid such machines, and look for two motor systems that provide a genuine 3-D workout.

## **Acceleration Training is Ideal for Virtually Everyone**

Whole Body Vibrational training, along with Peak Exercises, proves that exercise doesn't have to be difficult and time consuming to pay off. The near-total muscle fiber recruitment of Whole Body Vibrational training translates into a great high-intensity workout that can be completed in as little as 10 minutes, two to three times a week.

I truly believe Acceleration Training technology represents a revolution in fitness science that can benefit virtually everyone, regardless of age or fitness status.

Obviously, if you have health challenges such as heart disease or high blood pressure, you will want to consult with your health care provider before starting a new fitness program, but overall, Acceleration Training is so gentle that even the most frail can tolerate it, making it ideal even for the elderly and disabled.

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# Eat This to Reduce Muscle Soreness after Exercise

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In this interview, Dr. Craig Sale, an expert in sports physiology and nutrition, discusses the benefits and science behind supplementation with beta-alanine to improve muscle performance.

Many times, you can finish a workout and feel great, but the next day your body starts to ache. Your muscles feel sore because they are damaged and need time to recover; this is called DOMS, delayed onset muscle soreness.

DOMS starts between 8 and 24 hours after a workout. It happens most often to those who do not exercise on a regular basis or who have just resumed activity after a long term of inactivity. It used to be thought that the cause was buildup of lactic acid in the muscles, but it is now known that lactic acid does not remain in your muscle tissues for very long after an exercise session.

According to Steady Healthy, possible theories for the cause of DOMS include:

- Muscle soreness occurs because of microscopic tears in muscle fibers
- It is caused due to tears in the tissue that connects the muscle not the muscle itself
- The damaged muscles release chemical irritants, which irritate pain receptors
- The damaged muscles become inflamed hence causing soreness
- Changes in osmotic pressure, muscle spasms and a change in the way the muscle cells regulate calcium may be responsible for the soreness

## Dr. Mercola's Comments:

In a recent interview, Dr. Gabriel Cousens brought up a nutritional supplement of particular interest to vegans and vegetarians, namely **carnosine**. Muscle building can be particularly tricky for vegans since they don't get any animal protein in their diet, but Dr. Cousens' research has lead him to believe that vegans can compensate for the lack of protein by getting sufficient amounts of carnosine.

I was intrigued with Dr. Cousens' concept when he introduced it to me, so I decided to invest a few hours and scour the medical literature for evidence in support of it. As a result, I also interviewed Dr. Craig Sale, an expert in sports physiology and nutrition, to get his opinion on it. He's a wealth of knowledge on this topic, so to get the full scoop, I highly recommend listening to the entire interview or reading through the transcript.

Interestingly enough, not only is there some evidence suggesting it can be helpful for vegans but it also plays a significant role in muscle performance and muscle soreness.

## What is Carnosine, and How Can it Benefit Your Muscles?

Carnosine is a pluripotent dipeptide composed of two amino acids, beta-alanine and histadine, found in many tissues but most notably in your muscles. It serves several important roles, two of which are:

1. Buffering acids in your muscle and

## 2. Serving as a potent antioxidant

It appears particularly useful for improving anaerobic high intensity exercise performance, but both of the functions mentioned above also explain how carnosine may help reduce muscle soreness.

As mentioned in Steady Health, *damaged muscles become inflamed, which can cause soreness. Since carnosine is a potent antioxidant, in your muscle, its presence can serve to quell muscle inflammation. It's also a primary buffer against high lactic acid levels, as explained in a [review published in the International Journal of Sport Nutrition and Exercise Metabolism](#) in 2005.*

However, if you are considering using carnosine as a supplement it is important to realize that carnosine itself is probably *not* that useful because enzymes rapidly break it down to its constituent amino acids (beta-alanine and histidine), which are then absorbed by your muscles and re-formed back into carnosine.

Most studies find that if you want to increase athletic performance with carnosine, your best bet is to use **beta-alanine** instead, since beta-alanine appears to be the rate limiting amino acid in the formation of carnosine.

Dr. Sale explains:

*"One of the critical things to understand is that we talk about beta-alanine supplementation to increase muscle carnosine levels in the muscle. We do that because beta-alanine is the right limiting step to carnosine synthesis, primarily due to the fact that it's held in low concentration in your muscle. It's got a higher Km with muscle carnosine synthase, which is the enzyme responsible for the formation of carnosine in the muscle."*

The reason you want to have higher, or optimal, concentrations of carnosine in your muscle is because when you perform high intensity exercise, metabolites such as hydrogen ions accumulate in your muscle, which can disrupt the "contractile machinery" in your muscle and lead to fatigue.

As your muscle accumulates hydrogen ions, you reduce the pH, making the muscle more acidic. The theory behind beta-alanine supplementation is that by improving the levels of carnosine in your muscle, you can counteract the detrimental effect of these hydrogen ion, thereby enabling you to continue muscle contraction in the high intensity exercise for a longer period of time.

## **Beta-Alanine for Improved Performance and Reduced Muscle Soreness**

A [2002 study](#) demonstrated that athletes have a greater requirement for carnosine stores in their muscles and may be a factor determining their performance during high-intensity exercise, such as [Sprint 8](#) or strength training.

Beta-alanine has also been shown to be helpful for preventing muscle soreness when working out.

An interesting [study on carnosine published last year](#) states that:

*"Recent studies have shown that the chronic **oral ingestion of  $\beta$ -alanine can substantially elevate (up to 80 percent) the carnosine content of human skeletal muscle.***

*Interestingly, muscle carnosine loading leads to improved performance in high-intensity exercise in both untrained and trained individuals. Although carnosine is not involved in the classic adenosine triphosphate-generating metabolic pathways, this suggests an important role of the dipeptide in the homeostasis of contracting muscle cells, especially during high rates of anaerobic energy delivery.*

*Carnosine may attenuate acidosis by acting as a pH buffer, but improved contractile performance may also be obtained by improved excitation-contraction coupling and defence against reactive oxygen species. High carnosine concentrations are found in individuals with a high proportion of fast-twitch fibres, because these fibres are enriched with the dipeptide.*

*Muscle carnosine content is lower in women, declines with age and is probably lower in vegetarians, whose diets are deprived of  $\beta$ -alanine."*

So, should you use a supplement?

My impression is that although there are a number of useful dietary dipeptides like carnosine that might help with athletic performance, muscle building and soreness, the average person is still best served getting them from foods rather than supplements. The foods with the highest amount of useful dietary dipeptides like carnosine would be animal proteins, like eggs, whey protein, poultry and beef.

Since vegans avoid animal proteins and are deficient in carnosine-this is why Dr. Cousen recommends it as a supplement to his vegan patients.

Remember, that if you are a vegan or just want to improve your athletic performance and do decide to take a supplement, **I recommend taking its primary precursor, beta-alanine, rather than carnosine**, based on the science in this area. Dr. Sale agrees on this point. Beta-alanine is also a far less expensive supplement, compared to carnosine.

## **Another Beneficial Supplement for Optimal Muscle Performance**

Another "supernutrient" worth mentioning here is astaxanthin—one of the most potent antioxidants known to date. For example, it's far more powerful than beta-carotene, alpha-tocopherol, lycopene and lutein, all of which are members of its chemical family.

Astaxanthin is produced by the microalgae *Haematococcus pluvialis* when its water supply dries up, forcing it to protect itself from ultraviolet radiation. It exhibits VERY STRONG free radical scavenging activity, and protects your cells, organs and body tissues from oxidative damage, and has been shown to help improve muscle endurance, workout performance and recovery.

It also reduces inflammation from all causes, including workout injuries, and even enhances your ability to metabolize fat!

Mice given astaxanthin were found to have accelerated body fat reduction (i.e., "fat burning") when combined with exercise, as compared to exercise alone in a [2007 study](#). The researchers reported that

astaxanthin seems to exert this effect by protecting the function of a lipid transport enzyme on the membrane of mitochondria that "fuels" energy production.

The end result?

Buff mice. Not that the world needs more physically fit rodents, but what works on mice often works on YOU.

## Another Option: Using Acceleration Training

Aside from using a beta-alanine supplement, or eating foods high in carnosine or its precursors, there's an entirely different option that can help build and strengthen muscles while at the same time reducing muscle soreness.

The alternative I'm thinking of is called [Whole Body Vibrational Training \(WBVT\)](#), also known as [Acceleration Training](#) using a Power Plate. By stimulating your white muscle fibers—which are your fast- and super-fast muscle fibers—the Power Plate kick-starts your pituitary gland into making more growth hormone (HGH), which helps you build lean body mass and burn fat. Another [great effect of HGH](#) is its ability to accelerate tissue healing.

Acceleration Training is quite different in that the vibrating plate targets your entire body, focusing on fully integrated motor and neurological patterns, which allows you to work ALL your muscles, and nerves, all at the same time.

It's a truly revolutionary approach to fitness because it addresses your neuromuscular system as a whole, rather than one limb or muscle group at a time. Not to mention it's time efficient, allowing you to trim off several precious hours per week from your workout time.

When used together with my [Peak Fitness program](#), which includes Sprint 8; a series of powerful high-intensity burst-type exercises, you can complete your entire workout a *fraction* of the time you'd have to spend on traditional workouts.

Acceleration training using the Power Plate is really the perfect complement to Sprint 8 to build strength, shed excess fat, and improve athletic performance. Both of these techniques also help you produce growth hormone (HGH) naturally.

## How the Power Plate Works

The Power Plate works by vibrating in three-dimensions, or three planes: vertical, horizontal and sagittal (up and down). By moving very quickly (25 to 50 times per second) across a very short distance (two to four millimeters), you aren't knocked off balance, but the complex movement is just enough that your muscles have to continuously accommodate.

- When the Power Plate vibrates up and down, your muscle tone improves.
- The left to right and front to back movements improves your balance and coordination.

The net result is a dramatic improvement in strength and power, flexibility, balance, tone and leanness. But that's not all.

When you stand on the vibrating Power Plate, each muscle in your body reacts in a continuous flow of micro adjustments, expanding and contracting reflexively. Just like when your leg automatically jerks after your physician taps it with his reflex hammer, your muscles react *automatically* to the Power Plate's vibrations—25 to 50 times per second. Stimulating your muscles and nerves this way results in more work being done by your body in a shorter period of time—with FAR greater recruitment of your muscle fibers.

Just 12-25 minutes of Acceleration Training, three days a week, is really all you need.

## **The Many Benefits of Acceleration Training**

Aside from the benefits already mentioned, Acceleration Training has also been shown to provide:

- Immediate improvement in blood circulation
- Improved range of motion
- Improved proprioception and balance
- Increased bone density
- Faster recovery from injury
- Reduced pain and soreness

Which brings us right back to the issue of sore muscles...

While the jury is still out on what causes delayed onset muscle soreness (DOMS), there are strategies to help reduce muscle fatigue and soreness, whether you're a professional athlete or not.

To summarize, eating a diet that includes naturally-occurring carnosine, i.e. animal protein such as organic grass-fed beef or free-range chicken, or taking a beta-alanine supplement, and using a Power Plate can all help.

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# New Research Shows Abdominal Exercises Do Not Reduce Your Belly Fat

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A new study investigated the effect of abdominal exercises on abdominal fat. Twenty-four healthy, sedentary participants were randomly assigned either to an abdominal exercise group or a control group.

The abdominal exercise group performed 7 abdominal exercises, for 2 sets of 10 repetitions, 5 days a week for 6 weeks. Body composition, and abdominal muscular endurance were tested before and after training.

According to the study, as reported by Green Med Info:

*"There was no significant effect of abdominal exercises on body weight, body fat percentage, android fat percentage, android fat, abdominal circumference, abdominal skinfold and suprailiac skinfold measurements ... Six weeks of abdominal exercise training alone was not sufficient to reduce abdominal subcutaneous fat and other measures of body composition."*

## Dr. Mercola's Comments:

If you think doing endless crunches is going to reward you with "six-pack" abs, think again. When 24 adults did seven abdominal exercises, five days a week for six weeks, [they did not lose any belly fat](#), or fat *anywhere* on their bodies, for that matter.

This doesn't mean you should ditch your abs workout, though! The participants *did* significantly improve their muscular endurance, and no doubt their muscles would have become more defined had they lost the layer of belly fat first ... but they were missing a key component required to do that ...

## What do You Need to Know to Reduce Belly Fat?

Eighty percent of your ability to reduce excess body fat is determined by what you eat, with the other 20 percent related to exercise and other healthy lifestyle habits. So does this mean that it's virtually impossible to get a flat, firm stomach if your diet is based on sugar, fructose and processed junk food -- even if you work out religiously?

In most cases, yes!

You will not see defined abs unless you reduce your overall body fat, and a poor diet will act like a magnet to your excess fat, causing it to cling to you despite all your exercise efforts.

One of the most [pernicious dietary influences on your weight loss goals is fructose](#), which hides in so many processed foods and beverages, it can be near impossible to avoid unless you alter your shopping and cooking habits. By avoiding processed foods in general, and focusing instead on whole, preferably locally grown organic foods, cooked at home, you can plow your way through one of the greatest dietary obstacles there is today.

The number one step of any weight loss and weight maintenance plan is to severely restrict or eliminate fructose from your diet; it is the first of my two primary dietary recommendations that directly conflict with most people's dietary choices but could make a very big difference in your weight:

1. Severely restricting carbohydrates (sugars, fructose, and grains) in your diet
2. Increasing [healthy fat consumption](#)

For more details, if you are interested in reducing your body fat I suggest you [review my nutrition plan](#), which is a comprehensive and step-by-step guide to help you make health-promoting food and lifestyle choices. This includes:

Limit your fructose to less than 25 grams per day, and, ideally to less than 15 grams per day, as you're likely consuming 'hidden' fructose if you eat even small amounts of fruit, processed foods or sweetened beverages	Limit or eliminate all processed foods	Eliminate all gluten, and highly allergenic foods from your diet
Increase the amount of fresh vegetables in your diet, and consider juicing	Eat at least one-third of your food uncooked (raw), or as much as you can manage	Avoid <a href="#">artificial sweeteners</a> of all kinds

## What's the Best Fat-Busting Exercise?

I don't want to leave you with the impression that exercise is not important; this could not be further from the truth! To really maximize your weight loss efforts, combine your dietary changes with [high-intensity interval exercises like Sprint 8](#).

This short intense training protocol improves muscle energy utilization and expenditure due to its positive effects on increasing muscle mass and improving muscle fiber quality. Muscle tissue burns three to five times more energy than fat tissues. This means that muscle gain increases your body's metabolic rate and allows you to burn *more* calories, even when you're sleeping.

Further, several studies have confirmed that exercising in shorter bursts with rest periods in between burns more fat than exercising continuously for an entire session. In fact, you can actually lose more weight by reducing the amount of time you spend on exercise, as with Sprint 8 exercises, you only need 20 minutes, two to three times a week.

Any more and you'll overdo it!

You can get the details on [how to perform Sprint 8 exercises](#) in the video below.

## Strength Training Also Helps You Burn Fat

Again, one of the most time-efficient ways to burn more calories is actually to gain more muscle! For every pound of additional muscle you gain, your body will burn an additional 50-70 calories per day. So, if you gain 10 pounds of muscle, you will automatically burn 500-700 more calories per day than you did before.

Furthermore, your muscles also participate in the regulation of glucose and lipid metabolism and insulin sensitivity, protecting you against obesity, diabetes and cardiovascular disease.

Virtually everyone, from [kids](#) to seniors, can benefit from strength training, unfortunately many still make the mistake of equating weight training with "bulking up." Please understand that strength training is not just about "looking good." It's also an important part of [maintaining a healthy weight](#), strengthening your bones, and improving posture, range of motion and functionality of your body.

## Why Abdominal Exercises are *Still* Incredibly Important

Ab workouts specifically may not help you reduce body fat, but they will provide you with some phenomenal benefits. Your abdominals are part of your body's 29 core muscles, which are located mostly in your back, abdomen and pelvis. This group of muscles provides the foundation for movement throughout your entire body, and strengthening them can help protect and support your back, make your spine and body less prone to injury and help you gain greater balance and stability.

When you build your ab muscles, it's like developing an internal corset that holds your gut in. When you tighten your "inner weight belt," you create more stabilization for your spine, vertebrae and discs, which in turn can significantly reduce back pain and make it easier for you to lift heavy items, twist and turn and perform the movements required for a full life.

Having a strong abdominal wall is very important for optimal body movement and gets increasingly more important with advancing age. Strong abs represent a strong center of gravity, which means you'll be more stable and balanced, and less prone to falls. Not only that, but strengthening your abs will allow you to improve your posture by sitting straighter and standing taller.

## One of the Best Ab Workouts You'd Probably Never Expect ...

Healthy diet? Check.

Sprint 8? Check.

Strength training? Check!

Now you're ready to start incorporating even more techniques into your fitness routine, including those exercises that will directly tone and target specific body areas like your abs. Now, crunches and sit-ups do have their place, but the world of abdominal fitness has come a long way since you were doing sit-up tests in gym class.

Core exercises, specifically abdominal exercises, must be done in a variety of ranges of motion, in different angles and positions, in order to engage all muscles. It is also important to understand that what works for

one person or body type may not work for another. So the key is to find the variety that works for you, is challenging for you, and produces visible results.

This may include:

- Traditional exercises, such as a standard crunch with rotation or a standing rotation with a light hand weight.
- Functional exercises, including work on a stability ball.
- Stabilizing exercises, such as lying on the floor and pulling your belly back toward your spine and holding that position while breathing deeply
- Extension exercises, such as lying on your stomach with arms extended above your head. Then raising both arms and both legs, at the same time, off the floor. (Hold for a count of 5, or 5 breaths, and slowly return to the floor.)

Popular exercise programs that work your core muscles are widely available, and include virtually all the types of yoga and Pilates. Earlier this summer I have taken two Pilates lessons a week and have been impressed with the results so far.

Now, here is one you probably didn't expect: [push-ups](#)! Push-ups don't just give you a stronger upper body, they also train your abs -- as long as you're doing them correctly. I recommend watching [Darin Steen's demonstration of the proper form below](#), but I've also included a summary of key points to remember:

- Keep your body stiff and straight as a plank
- Elbows at a 45-degree angle from your sides
- Breathe in on the way down
- Lower your body all the way down, allowing your sternum to gently touch the floor
- Breathe out on the way up

If you're looking to get rock-hard abs, remember that proper dietary choices is your first step, but from there a comprehensive fitness program and targeted ab exercises will help you achieve your goal.

## Sources and References

- [Journal of Strength and Conditioning Research July 28, 2011](#)
- [Green Med Info](#)