



The New Jersey Police Chief

The Official Publication of the New Jersey State Association of Chiefs of Police

Vol. 18, No. 9 • October 2012

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Spot Reduction: Fat Chance

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If you watch television for any length of time, you'll see numerous infomercials that promote a variety of fitness products. By far, most of the fitness products that are featured on infomercials are for the abdominals. Here's a random sampling of such products and their claims:

- The Rhythm Rocker will "blast away fat and tighten and tone your abs."
- The Firm Express can "shrink that belly."
- RevAbs is "specifically designed to burn off the fat and give you a six-pack."
- T-Core for Men "delivers rock-hard, ripped washboard abs."
- Slim in 6 will "shrink your mid-section."
- The Ab Circle Pro, is "the easiest and fastest way to get flat washboard abs."
- The Ab Coaster is "all you need to get a lean and sexy waistline."
- The Ab Rocket will "strengthen and reshape your abs."
- The Bender Ball can "sculpt beautiful abs fast."

All of the claims suggest that the products can generate a localized loss of body fat from the abdominal area. Note the choice of verbs: tighten, tone, shrink, reshape and sculpt. In exercise science, this is known as spot reduction. A litmus test for evaluating spot reduction is to determine whether a significantly greater change occurs in an active (or exercised) muscle compared to an inactive (or unexercised) muscle.

Spot reduction has been investigated since at least 1962. The research shows that spot reduction isn't possible.

In a classic study, 19 subjects were assigned to two groups: One group performed a sit-up program for 27 days, amounting to 5,004 sit-ups per subject (with their legs bent at a 90-degree angle and no foot support). The other group served as a control and did no sit-ups. Those who did sit-ups significantly decreased the diameter of the fat cells in their abdominals, subscapular and gluteals to a similar degree. In other words, exercising their abdominals didn't preferentially affect the fat in their abdominal area more than their subscapular or gluteal areas.

In a more recent study, 24 subjects were randomly assigned to two groups. One group performed seven abdominal exercises for two sets of 10 repetitions five days per week for six weeks, amounting to 4,200 repetitions per subject. The other group served as a control and did no abdominal training. Those who did abdominal exercises increased their abdominal endurance more than those who did no abdominal exercises. However, there were no significant differences between the two groups in decreasing abdominal fat, abdominal skinfold or waist circumference.

Why isn't spot reduction possible? Well, when you exercise, fat (and carbohydrates) is drawn from throughout your body as a source of energy, not just from one specific area. Abdominal exercises certainly involve the abdominal muscles. But abdominal exercises have no preferential effect on the subcutaneous fat that resides over your abdominal muscles (and beneath your skin). For that reason, you can do abdominal exercises until you pass out but these Olympian efforts will not automatically trim your abdomen.

Case in point: In 1990, I worked briefly as a part-time trainer at The Club at Woodbridge. One of the members was Pedro Morales, a retired professional wrestler who was the first man to win the heavyweight (1971), intercontinental (1981) and tag team (1981) titles. As a wrestler, he was a fan favorite and if you met him, it would be easy to see why; he's a very personable and likeable dude. Pedro had the thickest forearms that I've ever seen on a human being of his height (about 5'10"). The muscle mass in the upper portion of his forearms was practically the size of a ham. And remember, at the time he was nearly 50 years old. Actually, his entire body was thick, including his abdomen. Pedro told me that each day, he did 1,000 crunches (essentially, abbreviated sit-ups) and I don't doubt that. Yet, his abdominals still looked like he swallowed a Volkswagen Beetle, along with the driver. Hundreds of thousands of crunches did nothing to tighten, tone, shrink, reshape or sculpt his abdominals.

By the way, there's no scientific evidence that spot reduction can occur in other areas of the body, either. One study involved a group of 20 male and female tennis players. These athletes had used one side of their body much more than the other for at least six hours per week for two years or more. As expected, their upper and lower arms on their preferred side were larger than on their non-preferred side. Among men, for example, the difference in the circumference of their lower arms was about 0.89 inches; with their upper arms, the difference was 0.37 inches. But there was no significant difference in the thickness of the subcutaneous fat over the muscles of the arm. So, exposing one arm to considerably more activity over a fairly lengthy period of time resulted in an increase in muscular size . . . without any preferential loss of fat.

Bottom line: You can spot target muscles but you can't spot reduce fat.