



Call Toll Free: 877-985-2695

High-Intensity Interval Training and Intermittent Fasting - A Winning Combo for Fat Reduction and Optimal Fitness

November 02 2012 | 109,613 views | [+ Add to Favorites](#)

794

95

62

19

24

901

[Print](#)[Email](#)**By Dr. Mercola**

If you're still not doing interval training, you're likely wasting an awful lot of time in the gym. This is one of the most important developments in fitness science that I can think of, as you can reap far *greater* health benefits in *less* time.

But I've recently also started talking about the potential health benefits of intermittent fasting and working out in a fasted state (i.e. skipping breakfast before hitting the gym).

When you exercise while fasting, it essentially forces your body to shed fat, as your body's fat burning processes are controlled by your sympathetic nervous system (SNS), and your SNS is activated by exercise and lack of food. The combination of fasting and exercising maximizes the impact of cellular factors and catalysts (cyclic AMP and AMP Kinases), which force the breakdown of fat and glycogen for energy.

Evidence is indeed mounting in support of this strategy, and I believe it could be quite beneficial, provided you've already made some fundamental lifestyle changes with regards to diet and exercise.

When combined, high-intensity exercise and intermittent fasting could very well be a winning strategy to bring your fitness to the next level.

Keep in mind that fasting, or exercising in a fasted state, would be unwise if you're still eating a diet full of processed foods, so addressing your diet is absolutely crucial before you venture into any kind of fasting. Also, when undertaking any kind of calorie restriction, such as intermittent fasting or simply skipping breakfast, it's critical to *cut the right calories*, namely *carbohydrates* (those from sugars and grains that is, NOT vegetable carbs).

Carb Restriction May Improve Performance in Elite Athletes

A recent study from the Swedish School of Sport and Health Sciences¹ shows that restricting carbohydrates can help burn calories more efficiently and increase muscle oxidative potential even in highly trained athletes.

Ten elite level cyclists performed one hour of interval training at approximately 64 percent of maximal aerobic capacity with either low or normal muscle glycogen levels, achieved by prior exercise or diet intervention. Muscle biopsies were taken before and three hours after exercise. Results showed that exercising in a glycogen depleted state increased mitochondrial biogenesis. (Mitochondrial biogenesis is the process by which new mitochondria are formed in your cells.)

According to the authors:

"We conclude that exercise with low glycogen levels amplifies the expression of the major genetic marker for mitochondrial biogenesis in highly trained cyclists. The results suggest that low glycogen exercise may be beneficial for improving muscle oxidative capacity."

Part of what makes working out in a fasted state so effective is that your body actually has a preservation mechanism that protects your active muscle from wasting itself. So if you don't have sufficient fuel in your system when you exercise, you're going to break down other tissues *but not the active muscle*, i.e. the muscle being exercised.

According to fitness expert Ori Hofmekler, author of *The Warrior Diet*, you can quite literally re-design your physique using a

combination of under-eating and exercise. However this really only works well once you've become fat-adapted, meaning your metabolism has become proficient at burning fat. To learn more about this, please see my other recent article on this topic, [What Does it Mean to Be Fat-Adapted?](#)

Interval Training Burns More Calories in Less Time

In related news, research presented at the Integrative Biology of Exercise VI meeting² in Colorado on October 10-13 this year, demonstrated that high-intensity interval training burns more calories in less time – a mere 2.5 minutes, divided into five 30-second sprint intervals at maximum exertion, each followed by four minutes of light pedaling to recuperate, can burn as much as 220 calories. All in all, in less than 25 minutes total, you can burn more calories than you would if you were cycling at a moderate pace for half an hour.

According to lead researcher, exercise physiology graduate student Kyle Sevits:³

"You burn a lot of calories in a very short time... Nearly all the calories are burned in those 2.5 minutes; you burn very few during the rest period." He also points to additional benefits that come from interval training, including increased insulin sensitivity and glucose tolerance, both of which are important for overall good health."

High-intensity interval training, which is part of my total Peak Fitness program, has also been shown to produce greater health benefits overall than conventional aerobic training. Back in April, I reported on a study that found doing just three minutes of high-intensity training per week for four weeks, could lead to significant changes in important health indices, including a 24 percent improvement in insulin sensitivity.

Another important benefit of high-intensity interval training is its ability to naturally increase your body's production of human growth hormone (HGH), also known as "the fitness hormone." 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. This is something you cannot get from conventional, aerobic endurance training.

How to Maximize the Health Benefits of Peak Fitness Training

While it's theoretically possible to reap valuable results with as little as three minutes (plus rest periods in between spurts) once a week, it would be more beneficial doing them two or three times a week for a total of four minutes of intense exertion per session, especially if you are not doing strength training. You do *not* need to do high-intensity exercises more often than that however. In fact, doing it more frequently than two or three times a week can be counterproductive, as your body needs to recover between sessions.

Intensity is KEY for reaping all the benefits interval training can offer. To perform it correctly, you'll want to raise your heart rate to your anaerobic threshold, and to do that, you have to give it your all for those 20 to 30 second intervals. Different studies will use different intervals of exertion and recuperation. For example, in the featured study on elite athletes, bouts of exertion were separated by four-minute rest intervals. They also didn't "max out" during the exertion phase.

I use and recommend the program developed by Phil Campbell, which will trigger HGH production as you go "all out" during the exertion phase. Here's a summary of what a typical interval routine might look like using an elliptical:

- Warm up for three minutes.
- Exercise as hard and fast as you can for 30 seconds. You should be gasping for breath and feel like you couldn't possibly go on another few seconds. It is better to use lower resistance and higher repetitions to increase your heart rate.
- Recover for 90 seconds, still moving, but at slower pace and decreased resistance.
- Repeat the high-intensity exercise and recovery 7 more times.

When you're first starting out, depending on your level of fitness, you may only be able to do two or three repetitions of the high-intensity intervals. As you get fitter, just keep adding repetitions until you're doing eight during your 20-minute session. Once you regularly incorporate these 20-minute exercises about twice a week, most people notice the following benefits:

Decrease in body fat	Improved muscle tone
Improved athletic speed and performance	Ability to achieve your fitness goals much faster
Increase in energy and sexual desire	Firmer skin and reduced wrinkles

Exercise is Key for Reducing Body Fat While Preserving Your Muscle

I've frequently stated that 80 percent of the health benefits you reap from a healthy lifestyle come from your diet, and the remaining 20 percent from exercise. However, it's important to realize that there is a profound synergy between the two, as yet another recent study demonstrates.

The researchers examined data from 11 participants in the reality TV show "The Biggest Loser." Total body fat, total energy expenditure, and resting metabolic rate were measured three times: at the start of the program, six weeks into the program, and at week 30, which was at least four months after participants returned home. Using a mathematical computer model of human metabolism, the researchers calculated the impact of the diet and exercise changes resulting in weight loss, to evaluate the relative contributions of each.

Interestingly, while diet alone was calculated to be responsible for more weight loss overall than exercise, only 65 percent of that weight loss was body fat. The remaining 35 percent reduction in total body weight was a reduction in lean muscle mass. Exercise alone resulted in fat loss only, along with a small increase in lean muscle mass. According to the National Institutes of Health press release:⁴

"The simulations also suggest that the participants could sustain their weight loss and avoid weight regain by adopting more moderate lifestyle changes – like 20 minutes of daily vigorous exercise and a 20 percent calorie restriction – than those demonstrated on the television program."

Tips for Fasting and Exercising Safely: A Post-Workout Recovery Meal is Crucial

An effective exercise program that incorporates high-intensity interval training combined with intermittent fasting can help counteract muscle aging and wasting, and boost fat-burning. If at any point you don't have enough energy or don't feel good, then it is likely time to shift your experiment and reduce the hours of fasting. Intermittent fasting should make you feel better, and if it doesn't then it is best to reevaluate your strategy.

Make sure to keep the following two points in mind:

1. **Timing of meals:** Intermittent fasting is not extreme calorie restriction. You're not supposed to starve yourself. Rather it's simply a matter of timing your meals properly by abstaining from food during much of the day, and limiting your eating to a

small window later in the evening. If you were to limit eating to say 4-7 pm, you are effectively fasting for 21 hours. Ideally, you'll want to fast for at least 12-18 hours.

If you can't abstain from food entirely during the day, limit it to small servings of light, low-glycemic, mostly raw foods such as fruits, vegetables, whey protein or lightly poached eggs every 4-6 hours. Whatever times you choose, it will be very helpful to avoid having any food or calories for three hours prior to going to bed as this will minimize oxidative damage to your system and give your body a major jumpstart in intermittent fasting.

- 2. Break your fast with a recovery meal on workout days:** On the days that you work out while fasting, you need to consume a recovery meal 30 minutes after your workout. Fast-assimilating whey protein is ideal. Then fast again until you eat your main meal at night. It's *very important* that you eat an appropriate recovery meal after your workout session, as this will prevent brain and muscle damage from occurring, so do NOT skip this meal.

If the thought of fasting for 12-18 hours is too much, you can get many of the same benefits of fasting and exercise by simply skipping breakfast and exercising first thing in the morning when your stomach is empty. This is because eating a full meal, particularly carbohydrates, before your workout will inhibit your sympathetic nervous system and reduce the fat burning effect of your exercise. Instead, eating lots of carbs activates your parasympathetic nervous system, (which promotes energy storage – the complete opposite of what you're aiming for).

[\[+\] Sources and References](#)