



Basic Health Info

Interval Training

By Chet Zelasko, PhD

Have you ever heard that if you exercise, you'll burn calories for hours after a workout?

Have you ever found yourself stuck on a weight-loss plateau?

Would you like to get more benefit from your workouts and get fit faster?

I'll bet your answer to all three questions is yes. The solution to all three is interval training. This health info will give you the latest science on interval training and explain how you can construct your own interval-training workout.



The Science

Interval training has been used by athletes for decades. Coaches found that if they had their athletes run or swim faster over shorter distances, it would train their bodies to go faster at longer distances. They didn't know why, but it seemed to work. Naturally this opened the door to many research studies—and now we know why. Using scientific jargon won't make it easier to understand, so what follows is an oversimplified version of two changes in the body researchers discovered as a result of interval training.

First, the athletes were breaking down muscle fibers, and when the muscle fibers were rebuilt, they were bigger and stronger.

While the muscles were repairing themselves, they used more energy—that's what causes the increase in metabolic rate. The problem is that it occurs only after high-intensity workouts. Your 45-minute walk or 30 minutes on the elliptical trainer is very important to your cardiovascular health, but you recover in about 10 minutes and you don't burn that many extra calories after you're done. But with high-intensity training, you can cause enough muscle-fiber damage to increase your metabolism for hours and, in some cases, days. Sounds great, right? So should you do intervals all the time? No way. Think about it—your body needs to devote itself to the repair process. That's why you shouldn't do more than one interval-training session a week; your body must recover and repair before you repeat the cycle.

Second, interval training trains the sugar-burning energy system.

There are three energy systems used when you exercise. The one that uses sugar (glycolysis) is the one you use most doing intervals—you'll know because your muscles will burn from the build-up of lactic acid, which is what's left over from burning sugar inefficiently. As you continue to do intervals every week, you'll train your body to burn sugar more effectively, reducing the build-up of lactic acid. That means you're more fit and you got there in a shorter period of time.

You may be thinking, "Great science. But how does that help me lose weight?" Intervals will cause muscle damage which will burn more calories during the repair process. You'll train your body to use fuel more efficiently. While you want to lose fat, your body will learn to burn sugar better while you're working out but you'll be a fat-burning machine after the workout—as long as you don't overeat. For those of you who want to get fit faster: I guarantee you will.

Interval training may have more benefit than just getting fit and helping get off weight-loss plateaus. In a recent study, researchers had sedentary but healthy men in their 20s exercise just a few minutes a week

(1). They did 30-second bursts on an exercise bike at the highest resistance they could tolerate, then they pedaled easy for four minutes to recover. They repeated this four to six times per workout and did six sessions in two weeks. Then researchers examined how their bodies responded to a 75-gram glucose drink (oral glucose-tolerance test). Their blood-sugar response was reduced up to 12% after just two weeks of interval training with no other exercise training during that time. It made their bodies eliminate sugar from their blood faster by making the insulin they produced more effective in clearing sugar from their bloodstream. The implications for reducing the risk of developing type-2 diabetes with this type of exercise program are interesting.

Before You Begin

You must check with your physician before trying interval training, especially if you have been sedentary. The men in the aforementioned study were young and otherwise healthy. If you're in your 50s and your idea of exercise has been walking to the kitchen for another bag of chips, you need physician clearance and at least a couple of months of aerobic exercise to establish a baseline first. Once you do, start slow and work your way up.

How to Construct an Interval Workout

There are four factors to consider: the intensity of the interval, the interval time, the rest between intervals, and the frequency.

Intensity: No matter what type of aerobic exercise you use, you have to be able to increase the resistance and the speed or both. If you walk, swim, jog, or cycle, that's pretty straightforward. If you walk, you can walk faster or walk up a hill. The same is true of running and cycling. For swimming, you can swim faster and/or put paddles on your hands to increase the resistance as you pull yourself through the water or use a more difficult stroke. Most exercise machines allow you to increase the speed or the resistance or both.

One thing you should know—if you choose to do intervals, your risk of injury goes up. Muscles and tendons that can handle an easy walk are more prone to injury when you go faster. Don't be a hero. Use your first interval workout as a time to explore the resistance and time you can handle. Then the next time you do it, you'll have an idea of exactly what you should do.

Interval Time: Optimal interval times are between 30 and 60 seconds. If you go beyond 60 seconds, you're training for a sport and need specific coaching. The resistance should be such that you can just manage to finish the interval: the shorter the interval, the higher the resistance and vice versa. You set the resistance so that by the time you finish the interval, your legs or arms or both should be burning and you should be breathing heavily—and that's why you need your physician to approve your workout and make sure you won't harm yourself.

The Rest Interval: You should rest at least three times longer than your Interval, and five times may be better. That means if your interval lasts 30 seconds, you're going to rest 90 to 150 seconds (1.5 – 2.5 minutes). The interval should allow you to recover almost completely. If you use a heart-rate monitor, you should be almost back to your warm-up heart rate. However, as you do more intervals, you may find you don't recover completely. That's okay as long as you recover mostly.

You don't stop moving! Rest doesn't mean take a nap. If you walked up a hill, you walk back down to start the next interval. If you were cycling at a high resistance and speed, you turn off the resistance and go easy. You just slow down and go easier until the next interval.

Interval-Training Frequency: One. That's it. Don't do more than one interval-training session a week so your body has time to recover and repair.

Dr. Chet's 20-Minute Interval Workout

You can use this as a model workout. I use a recumbent bike for this workout, but I've done it on elliptical trainers, stair climbers, even stairwells in hotels. Use what you like. Just be sure you do a warm-up before and a cool-down after, and no more than one session per week.

Warm-Up: 3 minutes

30-second Interval 1
90-second Rest

30-second Interval 2
90-second Rest

30-second Interval 3
90-second Rest

30-second Interval 4
90-second Rest

30-second Interval 5
90-second Rest

30-second Interval 6
90-second Rest

30-second Interval 7
90-second Rest

30-second Interval 8

Cool-Down: 2.5 minutes

The entire workout takes 20 minutes. You can use longer intervals and rest periods and fewer intervals, or you can go longer. I think 20 minutes is about right to get all the effects. When you're done, you should know you've put in a hard workout.

Reference

1. Babraj JA, et al. Extremely short duration high intensity interval training substantially improves insulin action in young healthy males. BMC Endocr Disord. 2009 Jan 28;9:3.

Dr. Chet Zelasko is dedicated to helping men and women get healthy and fit. As a health and fitness consultant with a PhD in Exercise Physiology and Health Education from Michigan State University, he provides health information based on the most recent research and delivers it in a way that's easy to understand. Whether in person during seminars, in audio recordings, or in the written word, he makes sense out of the health news people hear so they can make better health choices and achieve optimal health. He's conducted research and been published in peer-reviewed journals. He is certified by the American College of Sports Medicine as a Health and Fitness Specialist and has taught in ACSM certification workshops throughout the United States; he also belongs to the American Society of Nutrition. Although Grand Rapids, Michigan, is home, he has presented seminars on health to groups all over North America, Mexico, and the Caribbean and has written extensively on the health benefits of a good diet, regular exercise, and targeted supplementation.

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