

### **Excerpt From PACE: Rediscover Your Native Fitness by Dr. Al Sears**

#### **“Signal Your Body to Build What it Lacks**

Short bursts of exercise tell your body that storing energy as fat is inefficient, since you never exercise long enough to utilize the fat during each session. Carbohydrates, which are stored in muscle rather than fat, burn energy at high rates. Exercising for short periods will use these carbs and burn much more fat after exercising while you replenish the carbs. Short interval exercise maximizes fat “after burn.”

Researchers at Laval University in Quebec divided participants into two groups: long duration and repeated short-duration exercisers.<sup>1</sup> They had the long-duration group cycle 45 minutes without interruption. The short-term interval group cycled in numerous short bursts of 15-90 seconds, while resting in between.

The long duration group burned twice as many calories, so you would assume they would burn more fat. However, when the researchers recorded their body composition measurements, the interval group showed that they lost the most fat.

In fact, the interval group lost 9 times more fat than the endurance group for every calorie burned. Doesn't this defy the laws of physics? No, it just illustrates that exercise continues to affect your metabolism after you stop. The short bursts stimulate a greater after burn.

In addition, short duration bursts produce many other desirable results for your metabolic health:

- Improves maximal cardiac outputs.
- Promotes the development of quicker cardiac adjustments to changes in demand.
- Helps you lose body fat with a little as 10 minutes per day.
- Achieves “higher peak stroke volumes during overload.” (Your peak stroke volume is the maximal amount of blood your heart can pump per beat when maximally challenged.)
- Improves cholesterol levels, (subjects in a study of exercise bursts showed a decrease in total cholesterol and an increase in “good” cholesterol).<sup>2</sup>
- Provides an anti-aging benefit by raising testosterone levels, which fights against memory loss, accumulation of fat, low libido, sexual dysfunction, and loss of strength and bone.<sup>3</sup>
- Helps you lose weight by burning much more fat after you stop exercising.

And, you'll be able to get these benefits with much less of your time – no need to spend hours in the gym.”

<sup>1</sup>Metabolism 1994; 43: 814-818.

<sup>2</sup>Medicine and Science in Sports and Exercise 2002; 34: 1468-1474.

<sup>3</sup>Journal of Applied Physiology 1999: 87 (3) 982-992.



## ***12-Week Interval Training Cardiovascular Schedule***

One of the fastest ways to increase your stamina, your heart and lung capacity and your metabolism is to start a cardiovascular plan that involves interval training instead of long slow distance exercise. Almost any activity can be used for your interval training. Here are some examples:

- Running/Sprinting
- Biking
- Swimming
- Jumping jacks
- Jumping rope
- Burpees (Squat Thrusts)
- Calisthenics
- Stairs
- Rowing
- [Kettlebell swings](#) (of course, one of my favorites)
- Kettlebell squat and catch
- [Heavy battling ropes](#)
- Suicides
- Hops-overs (step or bench)
- Side shuffles, are a few options.

The key here is to get your heart rate up as high as possible and be panting at the end of each interval. If you find that you cannot consistently get your heart rate up with one mode of exercise, switch to a different mode or make that exercise more challenging by going faster, harder, or more uphill, etc.

My favorite way of timing the intervals is with a countdown timer that repeats. The Ironman watch and the [Gymboss](#) both work very well. [The Gymboss](#) is great for doing Tabata Protocols (20 sec. Work/10 sec. Rest for 8 rounds) or uneven work/rest sets because you can set the intervals for different times.

Below are three cardio schedules for the next 12-week period. They are broken down into beginner, intermediate and advanced plans. It is up to you to determine your ability level. Please do not move ahead of schedule once you decide on a plan. It is made out this way to help your body adapt to doing intervals with a progressive pace.

Each program should be completed 2-4 days per week. The number of days you pick will depend on what other forms of exercise you participate in. Try not to do the same intervals two days in a row. Give your body a chance to recover and be at top condition for the next workout. Please do not do your intervals before the boot camp classes. We always do some form of intervals there too.

Please note that you are not going to put on fat if you still love to go out for long slow distance jogs, walks or biking excursions once a week. Exercise should be enjoyable. (You don't see too many fat triathletes.) The goal here is to not spend hours training and get the most bang for your buck...and intervals is the best way to accomplish this.

### Beginner Program:

This program is for the true beginner that does not have a good aerobic base. If you are sedentary, this is a good starting point for you. Note, once you get to the end of 6 weeks, you will need to progress to week 1 of the Intermediate Level. You will be repeating the 2-minute sequence for 4 weeks (Week 5 & 6 of beginner and Week 1 & 2 of intermediate). This will let you adapt to interval training even more.

Weeks	Warm Up	Sets		Number of Sets
		Work	Rest	
1	3 min	6 min	3 min	1
2	3 min	3 min	2 min	2
3	2 min	2 min	2 min	3
4	2 min	1 min	1 min	3
5 & 6	2 min	2 min	2 min	4

### Intermediate Program:

The intermediate program is for those who are already active and can withstand the rigors of interval training. With this program, you will incorporate the fundamentals of interval training: intensity, acceleration, progressivity and decreasing duration. Your last 2 weeks will concentrate on the Tabata Protocol.

Weeks	Warm Up	Sets		Number of Sets
		Work	Rest	
1 & 2	3 min	2 min	2 min	4
3 & 4	3 min	90 sec	2 min	4
5 & 6	2 min	60 sec	2 min	6
7 & 8	2 min	40 sec	1 min	6
9 & 10	2 min	30 sec	30 sec	8
11 & 12	2 min	20 sec	10 sec	8

### Advanced Program:

The advanced program is for those who have been doing intervals at least 2 times per week for a while and want to challenge themselves. Don't be fooled into thinking this is easy. You should be pushing at an all out effort on each work set. Note that this program only goes through Week 8. Once you get to Week 9, take a break from intervals for a week and then assess what you should do next to challenge yourself. It may be to try a different mode of exercise or to do the form of intervals that you liked the best.

Weeks	Warm Up	Set 1		Set 2		Sets 3		Sets 4		Sets 5		Sets 6		# Of Sets
		Work	Rest	Work	Rest	Work	Rest	Work	Rest	Work	Rest	Work	Rest	
1 & 2	2 min	1 min	90 sec	50 sec	90 sec	40 sec	90 sec	30 sec	90 sec	20 sec	90 sec	10 sec	90 sec	X
3 & 4	2 min	1 min	1 min	50 sec	50 sec	40 sec	40 sec	30 sec	30 sec	20 sec	20 sec	10 sec	10 sec	X
5	2 min	20 sec	10 sec	T	A	B	A	T	A	S				8
6	2 min	1/4 mi	3 min	S	P	R	I	N	T	S				6
7	2 min	20 sec	10 sec	T	A	B	A	T	A	S				8
8	2 min	1/4 mi	3 min	S	P	R	I	N	T	S				6