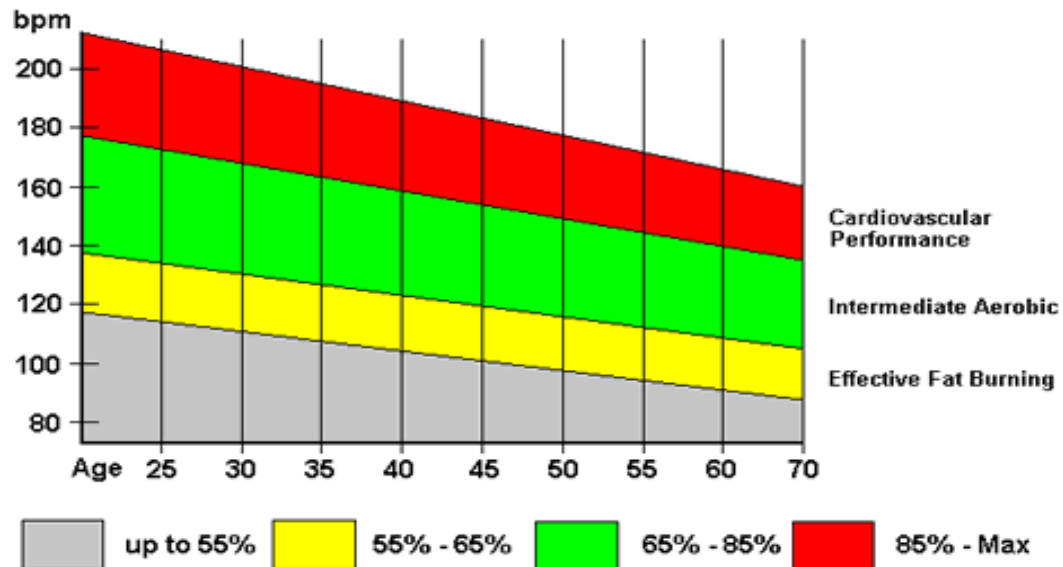


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# Slow and Steady: Does it Really Burn More Fat?

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The correct answer to this question is, as many things in health and fitness, a bit more complex than just giving a simple yes or no answer. I know you have heard this before but it really does depend on a few things....mainly **training intensity** and **duration of exercise**. **Certainly the graph above (which is all over the walls of “Fitness World” type establishments) gives an inaccurate representation of the true picture.**

Consider this. If your heart rate correlates with the amount of work you are doing (and it does when efforts last for a few minutes or more).....then does anyone really believe you should exercise at a lower work output to loose more fat? Duh! **So how did this myth come about?**

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## The Fat Burn Zone Myth

There is a belief held by many, including those working in the “fitness industry”, that the best way to loose fat is to work at moderate intensities. As stated above, this is misinformed. Obviously if you go for an all-day hike you are going to burn a considerable amount of fat as fuel, but often people only have an hour or even less to spare in which they can exercise. The bottom line is that if you only have a short period of time available you should probably exercise intensely (assuming that the **intensity level chosen is safe for you**).

What in fact happens in lower intensity exercise is that a greater percentage of fat is burned. For example, if you cycled along at 50%  $\dot{V}O_2$ max ( $\dot{V}O_2$  max = aerobic capacity), fat would provide about 50%, on average, of the energy you needed to keep going. But if you cycle along at 75%  $\dot{V}O_2$ max, fat would provide only 33% of the required calories. Thus, the slower workout sounds better from the fat breakdown perspective - or does it? Not if you understand percentages! 1% of Bill Gate’s net worth is worth more than 100% of most other peoples net worth (you can trust me on that one), so we should be careful about our use of percentages.

Let’s look at an example for a subject who has a  $\dot{V}O_2$  max of 2.0 litres/min (see table below). This subject does two 30-minutes workouts one at 50% of her  $\dot{V}O_2$  max (about 65% max heart

rate) and one at 70% (about 80% max heart rate) of her  $\dot{V}O_2$  max. These variables are shown in bold in the table below. This table ultimately shows the fat burned during these two exercise sessions (in row 5); but it needs some explaining.

The greater the energy requirements the more our bodies switch to glucose and glycogen use (because of its efficiency). It is for this reason that when working at the lower intensity (1 litre of oxygen per min) she will burn a greater percentage of fat compared with the higher intensity. The second row reflects this higher fat utilisation per litre of oxygen available. It is this information that has probably led to the misconception of slow and steady being better for fat loss. But what does row 2 really tell us? All it says is that for each litre of oxygen burned you will burn more fat calories if you workout slowly. But if you work out more intensely you will utilize more oxygen during the workout and ultimately burn more calories (rows 3 and 4 in the table). And, as in the Bill Gates analogy, you are sometimes better off to take a low percentage of something large than a higher percentage of something smaller.

		Exercise Intensity	
		( $\dot{V}O_2$ max)	
Parameters		50%	70%
1	Litres of oxygen per min	1.0	1.4
2	Fat kcal burned per litre of $O_2$	2.43	1.96
3	kcal burned per min	4.86	6.86
4	kcal burned per 30 min	146	206
5	Fat kcal burned per 30 min	73	82

So row 5 shows that more fat is burned at the higher intensity of exercise over the same duration. **Therefore, if you have limited time it is best to exercise as hard as safely possible. Does that sound like CrossFit?**

An added benefit to higher intensity work is that you work at a much higher metabolic rate and so your metabolism stays higher for longer after the workout. In addition, high intensity exercise (especially CrossFit type workouts) will increase muscle mass which is a more metabolically active tissue than adipose (fat) tissue. **Even at rest, one pound of muscle burns 30 to 50 calories a day whereas one pound of adipose tissue burns 3 calories a day!** Additionally, having more muscle mass and training across all metabolic pathways, as recommended in CrossFit, increases your muscular endurance which will allow you to do more activity throughout the day.

During high intensity exercise for an extended period you burn muscle and liver glycogen. When you eat carbohydrates these stores will be replaced. If you hadn't depleted these glycogen stores any digested glucose in excess to general energy needs, will be stored as fat. This is another misconception that people harbour; that somehow only burning fat will reduce the amount of fat stored in their body. This is not the case as just explained. You body can convert glucose into fat for storage. This issue also highlights the importance of eating enough carbohydrates, as fat in the diet cannot be used to replenish glycogen stores. Of course this doesn't mean over-eating carbohydrates as enough is enough. Also High-Glycemic carbohydrates produce inordinate insulin response so should be avoided. However, low glycemic carbohydrates in the right proportion are essential to replace glycogen stores.

One study looking at this topic found that a group of subjects doing bike interval work (series of sprints) lost more body fat than another group doing steady state cycling. The researchers controlled the work rates so that the total work done for each session for both groups was the same. More research needs to be done, but maybe one day we will be recommending

anaerobic interval training as the best way to loose body fat! Obviously, we must consider safety, comfort and motivation as such high intensity work is not well tolerated by many.

Exercise duration is still a critical factor that must be considered. In one study three groups walked and ran for 15, 30 and 45 minutes respectively for a 20-week training period. As one would expect the 45-minute training group lost more body fat. While not earth shattering news, it is important in previously sedentary individuals to start off exercising at low to moderate intensities, so duration of exercise may be the only way to manipulate total calories expended. For obese individuals high intensity exercise is not well tolerated and walking or swimming are generally preferred modes of exercise.

## Don't just take my word for it!

All the links on the left of this page: <http://www.exrx.net/FatLoss.html> show the benefits of weight training and high intensity exercise in losing fat. **This is a great site.**

This page <http://www.brianmac.demon.co.uk/fatburn.htm> discusses research on determining the optimum intensity for burning fat. But this site also supports my points above and states that high intensity sessions are just as good as steady state endurance exercise.

This site quotes the following example. "A moderately fit athlete exercising at 50%  $\dot{V}O_2$ max generally consumes about 220 calories during a 30 minute workout. If the same athlete works out at 75%  $\dot{V}O_2$ max, 330 calories are burned during the same period. Of course, 50% of 220 calories and 33% of 330 calories yield an identical number of calories coming from fat - 110 calories." And you burned more calories in total!

The excerpt below from this site also supports my discussion above and the table maybe a little easier to follow! <http://www.prevention.com/article/0,5778,s1-4-88-278-4219-1,00.html>

"For example, say a 140-pound woman performs either a fairly easy walk or a high-intensity jog. After 1 hour, she would have burned the following in total and fat calories:

	<b>Moderate Intensity</b> (60-70% max heart rate)	<b>High Intensity</b> (70-80% max heart rate)
Total calories burned	192	288
Percentage of fat calories burned:	75%	50%
Total fat calories burned	144	144

As you can see, you would burn **just as much fat and significantly more calories** by working out at a higher intensity. What's more, high-intensity exercise kicks your metabolism into high gear even after you're done working out."