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### Fat Burning, what is best?

One of the most common questions I get daily from people is....."I want to burn more fat, is it more beneficial for me to be working at a lower intensity, or a higher intensity in my exercise sessions?"

People use carbohydrates and fat for body fuel during exercise. These two fuels provide energy on a varying scale. When you walk at a low intensity, the majority of fuel is coming from fat, but as the intensity increases (as from walking to running) and you start getting closer to your "lactate threshold" (the exercise intensity that marks the transition between using fuel aerobically and anaerobically), the amount of fat burning decreases and the amount of carbohydrate burning increases. Why does this happen? The body now relies more on carbohydrates (glycolysis) to meet the higher demand for energy. This is a natural occurrence as fatty acid(fat) cannot be delivered to the exercising muscles at higher intensity levels. When exercising below the lactate threshold (the burn level),you are using mostly carbohydrates, but once intensity raises enough to take you to the lactate acid threshold carbohydrates become the only fuel source. When someone exercises for a longer duration, about 1.5 or 2 hours, their muscles' carbohydrate content and blood glucose concentration become low. This metabolic state presents a threat to the muscles' survival since carbohydrates are muscles preferred fuel. When carbohydrates are not available, the muscles are forced to rely on fat as fuel.

Since more fat is used at low exercise intensities, people often assume that low intensity exercise is best for burning fat, an idea that has given birth to the "fat-burning zone". However, while only a small amount of fat is used when exercising just below the lactate threshold, the rate of caloric expenditure and the total number of calories expenditure are much greater than they are when exercising at a lower intensity , so the total amount of fat used is also greater. What matters is the rate of energy expenditure rather than simply the percentage of energy expenditure derived from fat. A study done by Achten, Gleeson and Jeukendrup (2002) found that the highest rate of fat oxidation in moderately trained women running at six intensities was at 75% of VO2max (training zone)..

If someone were to ask me what is better for weight-loss, I would say, "calories in calories out", the chart below explains it beautifully. The higher the calorie expenditure in total, the higher the fat calories burned in that session.

Activity	Calorie expenditure per hour	Percentage of fat burned as fuel	Calories used from fat	Percentage of glycogen expended	Calories used from glycogen
Walking (2.5 mph)	216	60%	130	40%	86
Running (5.5 mph)	800	40%	320	60%	480