Reaching ideal body composition

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I don't discuss this subject in great detail with my athletes because it is the sort of subject that can drive high achieving athletes even more insane. I do mention that extra body fat is detrimental to performance and causes more stress on the joints when running and, unless they want to dig down on the subject, leave it at that. Why? Because my focus in coaching is on helping people to get fit and to have fun, not helping people to obsess about their calorie intake or to develop body image issues. So, please take this article with a grain of salt and maybe some doughnuts as you'd like.

However, this does not change the fact that if you're carrying around more body fat than you need, you're not really doing *everything* you can to become a better, faster, fitter athlete. You may be training long and hard, but you're slacking in the nutrition department. And this will negatively impact your race day performance, not to mention the stress extra weight causes in other ways.

VO2 max (relative equation) = maximum milliliters of oxygen consumed in 1 minute / body weight in kilograms

If you're not familiar with V02 max, it is the ultimate predictor of endurance athletic ability. As you can read in the above equation, it includes body weight as the denominator. If you're not a science-y type, that means any increase in your body weight is going to decrease your V02max value and by extension your lactate threshold ability. Re = in endurance sports, as you grow fatter than your ideal body composition, you get slower.

Purely from a performance perspective, let's talk about cycling and running. For example, imagine a male athlete with an ideal body fat composition of around 7% body fat and 140 pounds. This is getting towards the low end of elite male athletes, but you will definitely see even leaner athletes on the race course. (5-12% for men and 12-20% for women is athletic / elite fit type).

Let us imagine at this weight/composition our athlete can put out 300 watts at threshold power and run 5:10 / mile threshold speed. Now take the same athlete and add 7 pounds, most of it adipose tissue aka fat. That's not a lot, right? But that 7 pounds is 5% of body weight at 140 pounds, meaning the athlete is now 12% body fat. That's still relatively low! But consider the ramifications to the power / weight ratio and threshold running speed. At 140 lbs (63.63kg) the athletes' threshold power to weight is 4.714 w/kg. At 147 lbs it is 4.489 w/kg. That's about a 4.7% reduction in his power / weight ratio. The power equation does not particularly discuss the decreased V02 max value that additional weight will cause but shows the net result. Any hill is going to be slower and his engine is not quite as fit on the flats as it used to be since it has to power 7 extra pounds everywhere. You can find a variety of bike speed calculators based on these numbers on the internet.

Now, the popular calculation for running speed is to add 2 seconds per pound per mile. That is more or less in the ball park but let's get geeky and take a look at the impact on V02 max. If his V02max was 68.35 ml/kg/min at 7% and 140 lbs (based on 4350 ml oxygen in 1 minute), it would be 65.10 at 147 lbs. That is a 4.4% reduction in V02max.

There are other factors that impact running speed besides weight and V02max like technique and economy, but to get to the point let's estimate that for this particular athlete each pound adds 1 second per mile. His threshold run speed is now no faster than 5:17 per mile, or ~:43 seconds slower for a 10k. That is a world of difference in placing at the elite and amateur elite levels.

If you were to calculate his threshold 10k run time of 31:30 and add 4.4% (the reduction in V02max) the time would be 32:48 or more like 1:20 slower instead of :43 for a 10k.

The popular calculation of 2 seconds / pound / mile = 5:24 threshold speed or 32:54 for the same 10k.

So to anyone out there that has time goals, performance goals, and so on, think about this the next time you're getting ready to shove another delicious Christmas cookie in your face!

Marty Gaal, CSCS, is a triathlon coach based in Cary, North Carolina. He loves cookies. You can read more at www.osbmultisport.com.