

Resting Metabolic Rate (RMR): The power of data capture

By Rob Lockey, CSCS

With fall upon us and the long days of summer waning, the amount of time to train will change for most of us. This means less time on the bike with possible indoor activities that may not use the same amount of energy. A reduction in energy expenditure per day can happen due to the weather dictating more of our mode of exercise. So, have you thought about the change your eating needs to go through as well? Most likely not, and this is where we make the mistake in not pulling back the consumption of calories in our daily life. Taking the steps to learn what amount of energy your body needs to survive and applying the activity expenditures to find a balance will help you maintain your weight through the fall and winter. With this under control you can start spring training in a better place and find greater progress in the coming year.

Resting Metabolic Rate (RMR) [also referred to as Basal Metabolic Rate (BMR)] is a measure of the lean mass energy usage of the individual. Put another way, RMR is the amount of calories that muscles, bones, organs and the nervous system use to maintain a current state in the human body. This measure is displayed as an amount of calories used in a 24 hour period. Presented here are two methods to determine an individual's RMR: indirect and direct measurements. An indirect method is using a math equation that takes into account the person's gender, age, height and weight. A direct method begins with fasting for twelve hours to bring the body to a steady state. Once fasted and relaxed, expired air is captured for analysis while breathing into a measuring device for up to fifteen minutes. The latter is more accurate due to the known usage of fuels (carbohydrate, fat and protein) in the body by measuring the utilization of oxygen.

Once an individual knows the number of calories they use in a 24 hour period, they can set up daily feeding against daily expenditure. This is where most of us fall behind in accurately monitoring, by either over or under feeding. You can have two very similar individuals and get two distinct RMR readings from both types of measure. Using myself and Joe Athlete as an example:

Math example (indirect):

Rob: Age (38), Gender (Male), Weight (160lbs.) and Height (5'6") = **RMR 1640**

Joe: Age (35), Gender (Male), Weight (162lbs.) and Height (5'7") = **RMR 1686**

Gas collection (direct):

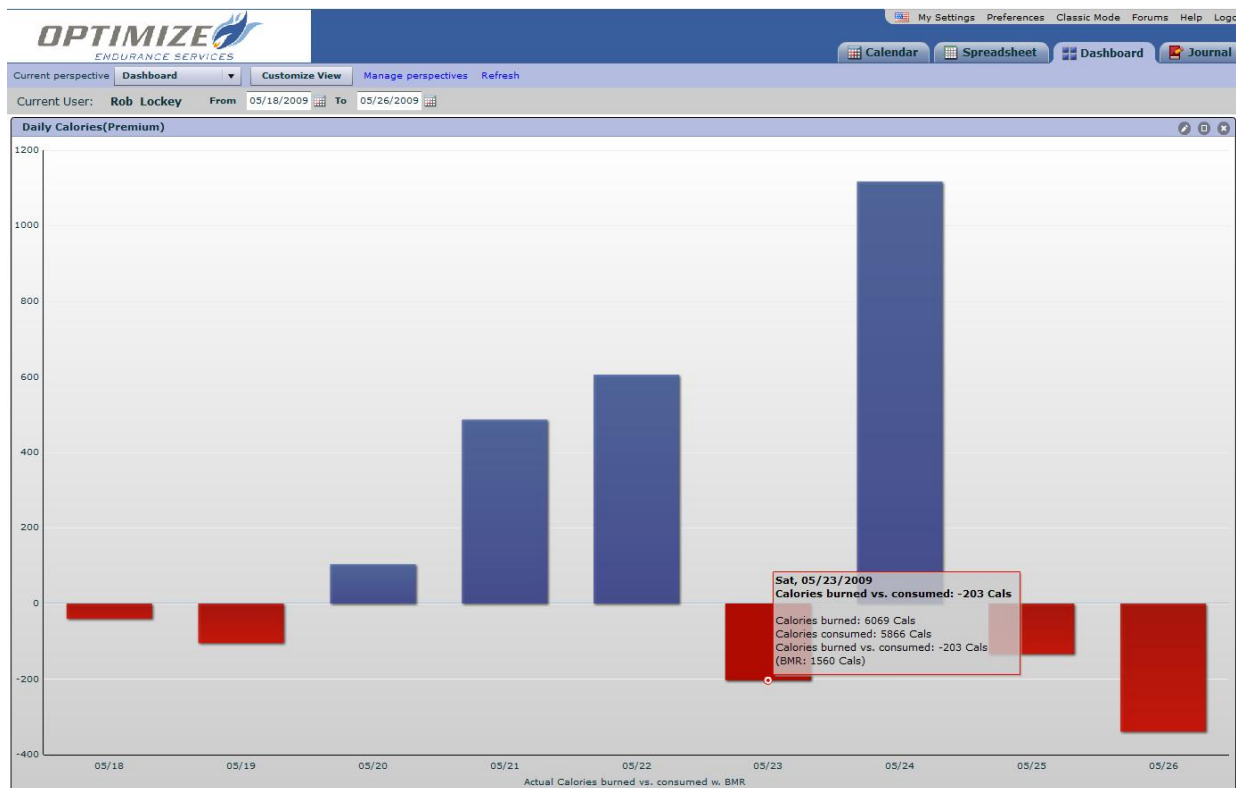
Rob: fasted 12 hours, tested early morning shortly after waking = **RMR 1560**

Joe: fasted 12 hours, tested early morning shortly after waking = **RMR 1440**

With my readings presented here you can see a small discrepancy between the direct and indirect methods-eighty calories. This difference could lead to overfeeding when following the math equation, which can add up to just over eight pounds of weight gain in a year. For Joe, his difference is actually over two hundred calories a day which can add up to twenty-five pounds in a year! This equation could easily trend the opposite direction as well and under feed over time. If this happens too often the body doesn't have enough energy to adapt to the training, possibly leaving you short of your goals. So, it is important to be able to monitor your intake and expenditure by determining your RMR. OES offers the direct measure RMR test for several price points based on where you live. Check out the website under the 'testing' tab for details, www.optimizeendurance.com.

Many of the training data collection devices (i.e. Garmin, Polar, Timex) out on the market today will give you an estimate on expended calories from a ride or workout. Taking this information along with collecting calorie intake data you can start to find a sweet spot to which you can maintain your current state. You can also affect it by adding or taking away body weight. A free resource that I use with my coaching clients, called TrainingPeaks.com, allows for the upload of these devices and the journaling of nutrition data to compile your intake and expenditure into useful graphs. Once all this data is in the same place, it becomes much easier to see how the whole eating and exercising thing comes together. View the graph provided to see my calories burned vs. consumed for a nine day period. The data box in the middle shows an expenditure of 6069 calories and a consumption of 5866 calories, only a negative of 203 calories for this day. Not a bad day considering it was 70 mile MTB ride in which I super compensated the three days prior in preparation for the ride.

So, as you can see real time data capture and knowledge of yourself can give you powerful information. You can make small changes over time to affect your body and your outlook.



Daily Calories Pod showing positive or negative aspects of calories burned vs. consumed. Visit www.TrainingPeaks.com to set up your free account and give it a try.

Rob Lockey, CSCS, ACSM/HFS and a USA Cycling LII Certified Coach, provides testing and coaching through Optimize Endurance Services. Contact him at 303-356-9893 or rob@optimizeendurance.com