

## Physical Activity and Controlling Weight

**The Key to Weight Control:** A simple equation of calories in minus calories out. This means to simply subtract the calories you've expended throughout the day from the ones you took in. But there is a little more to it than just that. The biggest piece of the puzzle is to understand what makes up your Total Energy Expenditure (see below).

**Beware of Fad Diets:** Don't let the media or any other source determine how or what you eat. Just try to get enough servings from each of the food groups everyday and control your portion sizes! Eating frequent, small meals throughout the day will result in an overall higher basal metabolic rate, which is the amount of energy your body expends at rest.

### Total Daily Energy Expenditure

TDEE is the total number of calories that your body expends in 24 hours, including all activities. It can vary widely in populations and is much higher for athletes or extremely active individuals. Caloric requirements may also vary among similarly active individuals due to differences in inherited metabolic rates.

**Caloric maintenance level** refers to the amount of calories you would need to consume in order to maintain your current body weight. There are many different formulas you can use to determine your caloric maintenance level. These formulas take into account the factors of age, sex, height, weight, lean body mass, and activity level. The "quick and easy" method is based only on total body weight and is as follows:

Fat Loss = 12-13 calories per pound of body weight

Maintenance = 15-16 calories per #

Weight Gain = 18-19 calories per #

So, if you are a 160-pound male or female wanting to lose weight, you would multiply 160 by 12 or 13. The product tells you that if you consume around 1900-2000 calories per day, then you should lose weight. A much more accurate method for determining TDEE is to determine your basal metabolic rate (BMR) using multiple factors, including height, weight, age, and sex, then multiply the BMR by an activity factor to calculate TDEE. BMR is the total number of calories your body requires for normal bodily functions (excluding activity factors). This includes keeping your heart beating, inhaling and exhaling air, digesting food, making new blood cells, maintaining your body temperature, and every other metabolic process in your body. In other words, your BMR is all the energy used for the basic processes of life itself. It may vary dramatically from person to person depending on genetic factors. Some people can eat and eat and never gain a pound because they inherited a high metabolism. BMR is at its lowest when you are sleeping and increases a little every time you eat in order to digest that food. (That is why it is good to eat small, frequent meals.) It also increases if you have a high percent of

lean mass, such as muscle. Since muscle is more active than fat, a muscular person will be able to eat more because they have a higher metabolism.

The **Harris-Benedict formula** is based on total body weight, height, age, and sex and is therefore more accurate than the “quick and easy” formula used above.

Men:  $BMR = 66 + (13.7 \times \text{wt in kg}) + (5 \times \text{ht in cm}) - (6.8 \times \text{age in years})$

Women:  $BMR = 655 + (9.6 \times \text{wt in kg}) + (1.8 \times \text{ht in cm}) - (4.7 \times \text{age in years})$

\*note: 1 inch = 2.54 cm and 1 kilogram = 2.2 lbs.

Example: You are a 30 year old female. You are 5'6" tall (167.6 cm) and weigh 120 pounds (54.5 kg). Your  $BMR = 655 + 523 + 302 - 141 = 1339$  calories/day.

Now that you know your BMR, you can calculate your TDEE by multiplying you BMR by your activity level.

### **Activity Multiplier:**

Sedentary =  $BMR \times 1.2$  (little or no exercise, desk job)

Lightly active =  $BMR \times 1.375$  (light exercise/ sports 1-3 days/week)

Moderately active =  $BMR \times 1.55$  (moderate exercise/ sports 6-7 days/week)

Very active =  $BMR \times 1.725$  (hard exercise every day, or exercising 2 xs/day)

Extra active =  $BMR \times 1.9$  (hard exercise 2 or more times per day, or training for marathon, or triathlon, etc.

Example: Your BMR is 1339 calories per day and your activity level is moderately active (work out 3-4 times per week). Your activity factor is 1.55 and your TDEE is  $1.55 \times 1339 = 2075$  calories per day. This is the total calories you could eat everyday if you wanted to maintain your weight. If you want to lose weight, you would either have to consume fewer calories everyday, increase you activity level, or do both.

Of course, the most accurate way to measure your TDEE is to have your body fat measured. At the Wellness Center in the Recreation Complex, you can have your body fat measured and your BMR calculated. This is a free service. Once they give you this data, it is up to you to determine you TDEE by multiplying your BMR by your activity level.