

METABOLISM

The metabolism is simply the process in which our bodies convert the foods we eat to energy to drive our basic physiologic functions. Metabolic rate refers to the number of calories (a measure of heat production) that one utilizes in a given time period. 24 Hour metabolic rate is, therefore, the number of calories that one "burns" in a day. Metabolic rate can be separated into three distinct components:

RMR (65-75%)
EEPA (15%)
TEM (10%)

1. Resting Metabolic Rate (RMR): This is the energy cost of the physiological functions to maintain homeostasis (cardiac output, respiration, temperature, etc.) RMR accounts for about 65-75% of daily expenditure. It is determined primarily by fat free mass which is in turn affected by age, gender and physical activity.

2. Energy Expenditure of Physical Activity (EEPA): This contributes the greatest variability of energy expenditure and is the cost of both voluntary and involuntary activity. Although this component is determined somewhat by body size, it is predominantly driven by the activity patterns of the individual. This component contributes anywhere from 15-50% of total daily expenditure.

3. Thermic Effect of Food (TEM): This refers to the energy cost of digestion, absorption, metabolism and storage of a meal. This elevation in the metabolic rate accounts for approximately 10% of daily energy expenditure. However, it should be noted that protein and carbohydrate raise this expenditure primarily whereas fat has little effect.

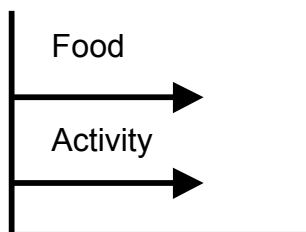
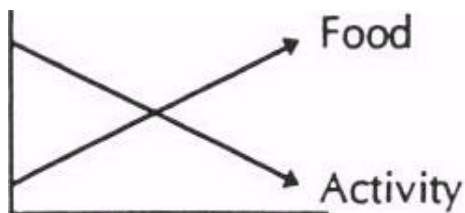
⇒ **BODY COMPOSITION:** Relative amount of fat (stored and essential) and fat free mass (muscle, bone and organs) in the body. This can be an important factor since fat free mass has a high metabolic activity (1 pound muscle burns approximately 13-15* calories per day) while fat mass is metabolically inert.

⇒ **ACTIVITY: *Ideal Exercise Prescription to Change Body Composition (see below)***

	Aerobic Exercise Guidelines (fat loss)	Strength/Resistance Training Guidelines (increase fat free mass)
Type:	Walk, jog, cycle, swim, aerobics classes, aerobic equipment (treadmill, bike, stair climbing, nordic track, rowing), etc.	Free weights or weight training machines, Dynaband, pool workout
Frequency:	4-6 days per week	2-3 days per week (1-3 days between sessions)
Duration:	30-45 minutes with pulse elevated	20-60 minutes
Intensity:	70-65% of maximal heart rate; 60-75% for beginners and those with limitations	2-3 sets of 8-10 repetitions to fatigue per muscle group; 1 set for beginners.

⇒ **MEAL PATTERNING:** Many people who lead busy lifestyles find that they eat very little in the first part of the day only to consume larger portions of food later in the day. However, this type of meal patterning can lead to unstable blood sugar (glucose) levels which, in turn can lead not only to decreased physical energy levels but, also to over consumption of high fat, high sugar foods. To maximize your metabolism for the burning of fat and to promote a healthy weight, we suggest the following strategies:

1. Try to space your calories out evenly throughout the day.
2. Always start your day with breakfast and then try to eat a meal every 4-5 hours.
3. Healthy snacks can be incorporated between meals and should be utilized if a meal is going to be late.
4. Try to eat 2/3 to 3/4 of your calories earlier in the day, by increasing the size of breakfast and lunch and eating a lighter dinner. By doing this you will supply energy to your body during its most active periods and you'll probably find yourself making better quality choices.



⇒ **DIET COMPOSITION: The 3m's to Balance**

Balanced meals, which contain carbohydrate, as well as some protein and fat, can be important in controlling hunger. A meal which is balanced is more likely to keep you satisfied than one that contains carbohydrate alone. Protein and fat leave the stomach more slowly therefore, offsetting the onset of hunger and controlling blood sugar levels.

- **MAXIMIZE CARBOHYDRATES:** Choose quality "carbohydrate" foods including fruits, vegetables, whole grains and beans (legumes). These foods not only are low fat but also contain fiber to help keep you satisfied longer.
- **MODERATE PROTEIN:** Include a little low fat "protein" at each meal. This can take the form of skim milk, soy milk or yogurt as well as the protein foods you might typically think of like beans, tofu, tempeh, cottage cheese, low fat cheeses, poultry, fish, eggs or egg whites. Nuts and nut butter provide protein and fat.
- **MINIMIZE FAT:** Balance your "fat" grams at your meals and snacks throughout the day. Become aware of foods that may contain hidden fats (soups, gravies, sauces etc.)

As with all of our recommendations, we encourage you to evaluate for yourself the benefit of the strategies you try.