

# Diet and Exercise Part 2: Exercise

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Remember the equations from Diet and Exercise Part 1: Diet.

- Calories eaten < calories burned = weight loss
- Calories eaten > calories burned = weight gain
- Calories eaten = calories burned = no weight change

**Have patience!!** It takes a difference of 3500 calories to burn 1 pound of fat. Your goal should be to lose 1 pound of fat per week. Measuring weight can be deceptive since muscle weighs more than fat and water shifts can lead to weight changes. Pay attention instead to appearance, changes in clothes sizes and lean body mass.

To increase the calories burned:

- 1) Increase your normal daily activities.
- 2) Increase your Basal Metabolic Rate.
- 3) Start and maintain an exercise plan.

**Increase your normal daily activities.** Even if you're not vigorously exercising, simply walking and increasing physical activity will help to burn more calories than just sitting in front of the TV.

**Increase your Basal Metabolic Rate (BMR).** Your BMR is a fancy term for your metabolism. This is the amount of calories your body burns if you are lying in bed all day doing nothing and, surprisingly, it usually accounts for over half of the calories your body burns. It takes energy for your heart to pump blood, your lungs to breathe, your muscles to maintain your body temperature and for the cells in the body to perform their biochemical reactions.

While genetics play a large role in determining your BMR, there are several ways to increase the BMR:

- Increase your muscle mass
- Do regular aerobic (cardiovascular) workouts

**Dieting alone without exercise will decrease your BMR!**

**Start and maintain an exercise plan.** If you are not active, you may need to start a little slower for the first 4 – 6 weeks.

**Determine your max heart rate.** This can be estimated as  $220 - \text{your age}$

e.g:    for a 15 y.o.    -     $220 - 15 = 205$ .  
          for a 35 y.o.    -     $220 - 35 = 185$ .

You can deduce from this equation that your max heart rate drops with age, but if you exercise regularly you can maintain a higher max heart rate than this formula predicts.

**Determine your resting heart rate.** This is the heart rate required by your body to maintain your BMR. Take your pulse on the thumb side of your wrist for a full minute (or for 30 seconds and multiply by 2) first thing in the morning when waking up without an alarm (an alarm clock may cause your body to release adrenaline and cause an inaccurate reading).

The resting heart rate drops with age. For teens and adults, the resting HR should be between 60 and 80. The more fit a person is, the lower the resting heart rate. Aerobic activity strengthens your heart and allows it to pump the same amount of blood each minute with a lower pulse.

**Calculate your reserve heart rate.** Subtract your resting heart rate from your max heart rate. This is the reserve your body uses to deliver extra oxygen to the muscles and brain for daily activities and exercise.

**Calculate your target heart rate for aerobic exercise.** This should be your resting heart rate plus 60% – 80% of your reserve. Those who are not active should start out at 50% of their reserve for the first 3-4 weeks and slowly increase to 60% - 80%. For longer workouts, you can use a lower target heart rate.

Example: Jon is 16 years old. His resting heart rate when he is lying down relaxing is 72.

His max heart rate is  $220 - 16 = 204$

His reserve is  $204 - 72 = 132$

If he exercises at 60% of reserve, his heart rate should be at  $(132 \times 0.6) + 72 = 151$

If he exercises at 80% of reserve, his heart rate should be at  $(132 \times 0.8) + 72 = 178$

**Aerobic Exercise:** Start slowly if you are not currently active. Parents who are over 45 (or over 35 with a strong family history of early heart disease) should have an exercise stress test prior to starting. The most important investment is a **heart rate monitor**. You can pick one up for \$50 - \$75. It consists of a strap that goes around your chest and a watch to show the heart rate. It will even transmit the heart rate to most electronic machines in the gym. It is worth spending the extra couple of dollars for the electrolyte conducting gel to increase the accuracy. The heart rate monitor will ensure you are exercising hard enough to train your heart and muscles, but not so hard that you are using anaerobic energy. Keep in mind that your heart rate will naturally increase over the course of a steady workout since the muscles take time to warm up and build up lactic acid.

While any duration of exercise is helpful, you should try to do a minimum of 20 minutes. The type of aerobic exercise you choose is not as important as the intensity of your workout. Aerobics, cycling, running, rollerblading, swimming, rowing, full-court basketball, soccer and kickboxing classes are all good choices. You should try to pick something you enjoy doing so you will continue to exercise. Each has advantages and disadvantages in terms of its wear and tear on the body. Swimming has less impact on the joints, but there are overuse injuries and it is harder to monitor your target heart rate. Contrary to popular opinion, **walking is not exercise** (unless you can document that you are keeping your heart rate in your target zone). Doubles tennis and half-court basketball may not be played hard enough to count as an aerobic exercise, but let the heart rate you maintain while playing be the ultimate judge. You can still do non-aerobic sports you enjoy in addition to your aerobic workouts.

**Weightlifting:** Lifting weights will help enhance the effects of your aerobic activity by increasing your lean body mass. The muscles will continue to burn calories many hours after your exercise. In fact, doing 3 aerobic exercises and lifting weights 3 times per week is better than doing 6 aerobics per week. When beginning, remember to start slowly and do lighter weights that can be repeated 12 times. Do at least 3 of these sets per muscle group.

**Breathing:** Breathing during exercise is very important. Taking slower deeper breaths during aerobic activity will enhance oxygen and carbon dioxide exchange better than panting. When you are weightlifting, breathe out when lifting the weight and breathe in when lowering the weight. Do not hold your breath as this will elevate your blood pressure.

**Stretching:** Stretch all of the appropriate muscle groups well before and after exercise. Pay special attention to the hamstrings and quads (your thigh muscles), the calves, the shins and your back muscles. Stretch until you start to feel tension in the muscle and hold the stretch. Do not overstretch. Always begin and end your exercise with a couple of minutes of light activity (warm-up and cool-down).

**Fluids:** Thirst is a sign of dehydration. It is important to take small quantities of water before you become thirsty. Maintaining hydration will enhance your exercise. For very prolonged, intensive exercise, you may need to take an electrolyte drink such as Gatorade.

**Warning signs:** If you have any of the following symptoms, stop exercising.

- Chest pain
- Dizziness or passing out during exercise
- Shortness of Breath (Trouble breathing in or breathing out or trouble catching your breath.) **Note:** Your body is supposed to breathe deeper and faster during exercise)
- Pain (You will feel a burn as you work out, but a sharp pain or a pain that is increasing in intensity signals possible damage to the muscle, tendon, joint or bone).