



GETTING BIGGER!

It takes both training and diet.

To gain weight in the form of muscle, both a regular program of resistance training and an increase in caloric intake is necessary. Adding an extra 300 to 500 calories per day will lead to an increase of about $\frac{1}{2}$ -1 pound of muscle weight per week, but only if one is engaged in an adequate program of resistance training. Increasing calories without an increase in either strength or endurance training will lead to an increase in body fat.

What should my resistance training program look like?

Basic information on resistance training is provided in the "Getting Started with Resistance Training" handout. Working each muscle group with 3 sets, 3-4 times per week is appropriate. Performing fewer repetitions (6-8) with heavier weight is best for increasing muscle mass. To continue to gain muscle mass, one needs to continually challenge muscles. One should increase resistance/weight when one can reach more than 8 repetitions for all sets during two consecutive workouts. Changing the exercises you use to target different muscle groups every one to two months can also enhance muscle growth. Individuals can consult with a personal trainer to develop an individualized resistance training program.

What about cardio training?

To maintain cardiovascular fitness and health, you should perform at least 20-30 minutes of cardiovascular exercise at least 3 days per week. Make sure you are consuming adequate calories to account for calories expended through both cardio and resistance training.

How can I increase my caloric intake?

To increase caloric intake, persons trying to gain muscle mass should eat frequent snacks and meals (about 5-6 per day). They should also focus on choosing calorie and nutrient dense foods, such as peanut butter, nuts, whole milk, cheese, granola, and avocados. Many other ideas for calorie and nutrient dense foods can be obtained from the nutrition page of the Student Wellness Center Web site or from the Student Wellness Center dietician, Janele Bayless (bayless.22@osu.edu)

It is important to remember that there is a limit to how much lean muscle mass you can gain over a given period of time. Any calories consumed in excess of those expended to support basic body functions, physical activity, and the building of body tissues will be stored as body fat. Therefore, consuming too many extra calories even if one is engaged in resistance and/or endurance training can cause one to gain body fat in addition to muscle. If you find you are gaining body fat as well as muscle mass, you will need to decrease your caloric intake slightly or increase your cardiovascular exercise to burn more calories.

Don't I need more protein too?

Consuming the proper mix of carbohydrate, fat, and protein is also important for gaining muscle mass. Carbohydrates are one's main source of energy and, thus, provide essential fuel for workouts. About 50-60% of one's daily caloric intake should come from carbohydrates. Fats should make up about 20-30% of daily caloric intake. The remaining 15-20% of daily calories should come from protein.

Protein needs for those who engage in endurance or resistance training are somewhat higher than the 0.8 grams of protein per kilogram of body weight recommended for sedentary individuals. 1.2 grams of protein for kilogram of body weight is appropriate for individuals engaged in substantial endurance training. Up to 1.8 grams per kilogram of body weight is appropriate for individuals engaged in regular resistance training. One can use the formula below to calculate an appropriate protein intake in grams.

$$\text{Weight in kilograms} = \text{weight in pounds} \div 2.2$$

$$\text{Lower limit for protein intake (in grams)} = \text{weight in kilograms} \times 1.2$$

$$\text{Upper limit for protein intake (in grams)} = \text{weight in kilograms} \times 1.8$$

E.g. Weight 160-pounds

$$\text{Weight in kilograms} = 160 \div 2.2 = 72.7 \text{ kilograms}$$

$$\text{Lower limit for protein intake} = 72.7 \times 1.2 \text{ grams} = 87 \text{ grams}$$

$$\text{Upper limit for protein intake} = 72.2 \times 1.8 \text{ grams} = 131 \text{ grams}$$

Many Americans already consume more than enough protein. It, therefore, may not be necessary to increase your intake of protein above what you are already consuming.

The list below shows the approximate amount of protein in some foods.

3 ounces of meat or fish (about the size of a deck of cards)	24 grams
1 cup of beans	18 grams
4 table spoons peanut butter	16 grams
12 ounces of milk	14 grams
2 large eggs	13 grams

While consuming high quality protein from animal sources (e.g. lean cuts of meat) seems to be the best way to gain muscle mass, protein from vegetable sources (e.g. beans, grains) also adds to your total protein intake. Be sure to count the grams of protein from both sources when calculating your daily intake.

Key source: OSU Sports Nutrition News and Notes, March 2005.