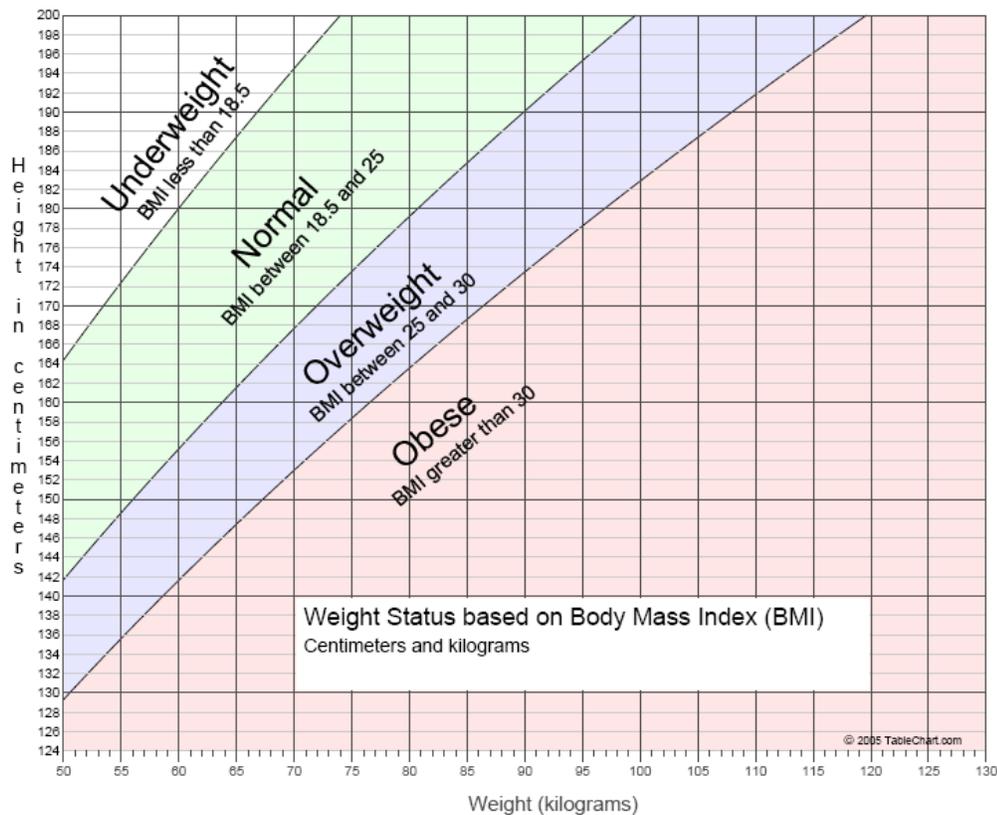


Body Mass Index and Calorie Intake

One of the easiest ways to assess if you are healthy weight is to measure your body mass index (BMI). The BMI is a calculation of your weight in relationship to your height. It is calculated using the following formula:

$$BMI = \frac{\text{weight (kg)}}{\text{height squared (m}^2\text{)}}$$



Due to its ease of measurement and calculation, it is the most widely used diagnostic tool to identify weight problems within a population, usually whether individuals are underweight, overweight or obese. It was invented between 1830 and 1850 by the Belgian polymath Adolphe Quetelet during the course of developing "social physics".

The medical establishment has generally acknowledged some shortcomings of BMI. Because the BMI is dependent only upon weight and height, it makes simplistic assumptions about distribution of muscle and bone mass, and thus may overestimate adiposity on those with more lean body mass (e.g. athletes) while underestimating adiposity on those with less lean body mass (e.g. the elderly). Lastly, because height is factored into the BMI, individuals who are very short – less than 5 feet – may have a high BMI, but may not be unhealthy.

Part #1 Calculating your BMI

Procedure:

1. Measure and record your height (in inches) using a meter stick. Convert it to centimeters, and meters.

Height: _____(in.) _____(cm) _____(m)

2. Measure your weight by using a scale and record your weight in kilograms.

Weight: _____(kg) _____(lb)

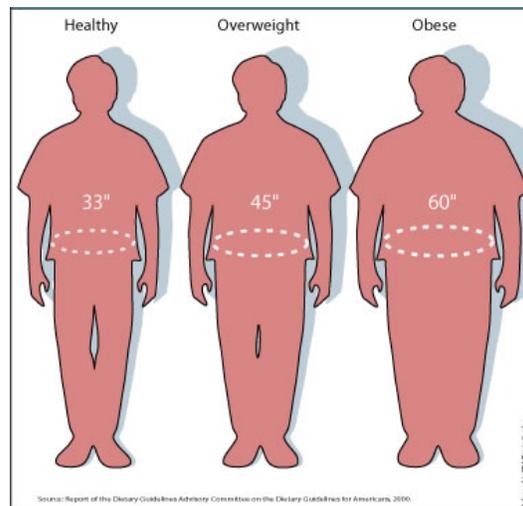
3. Calculate your BMI by using formula above:

BMI = Weight (kg) _____ / Height (m²) _____ = _____

Underweight Normal Overweight Obese

4. Measure a waist using tape measure. Position the tape measure horizontally at around the same level as your bellybutton, and near, or at, the narrowest part of your torso. Then circle it around your abdomen and entire torso. Make sure that the tape lies horizontal on all sides of your torso. Place the end of the tape measure which reads "0" at the spot on the tape where the loop circles your waist completely. Avoid sucking in your gut. Stand up strait and exhale gently as you pull the tape so that it stays taut against your body, but make sure it is not squeezing into your skin. Look at the number at the point where the "0" end of the tape intersects around your waist. This is your measurement.

Waist size: _____(in) _____(cm) _____(m)



Calories In vs. Calories Out

In order to maintain your weight, you need to make sure that you don't consume more calories than you expend daily. Spending as many calories as you take in is the concept behind energy balance.

Energy is another word for "calories." Your energy balance is the balance of calories consumed through eating and drinking compared to calories burned through physical activity. What you eat and drink is ENERGY IN. What you burn through physical activity is ENERGY OUT.

You burn a certain number of calories just by breathing air and digesting food. You also burn a certain number of calories (ENERGY OUT) through your daily routine. For example, children burn calories just being students—walking to their lockers, carrying books, etc.—and adults burn calories walking to the bus stop, going shopping, etc.

An important part of maintaining energy balance is the amount of ENERGY OUT (physical activity) that you do. People who are more **physically active** burn **more** calories than those who are not as physically active.

The same amount of ENERGY IN (calories consumed) and ENERGY OUT (calories burned) over time = weight stays the same

More IN than OUT over time = weight gain

More OUT than IN over time = weight loss

Your ENERGY IN and OUT don't have to balance every day. It's having a balance **over time** that will help you stay at a healthy weight for the long term. Children need to balance their energy, too, but they're also growing and that should be considered as well. Energy balance in children happens when the amount of ENERGY IN and ENERGY OUT supports natural growth without promoting excess weight gain.

Next part of your experiment will help you to estimate the average calorie intake to maintain your energy balance based on a person's gender, age, height, body weight, and level of physical activity.

Part #2: Calculating your energy needs.

1. First, complete the information below.

a.) My age is _____

b.) My physical activity during the day based on the chart below is _____

Physical Activity	Male	Female
Sedentary (no exercise)	1.00	1.00
Low active (walks about 2 miles daily at 3-4 mph)	1.11	1.12
Active (walks about 7 miles daily at 3-4 mph)	1.26	1.27
Very active (walks about 17 miles daily at 3-4 mph)	1.48	1.45

c.) My weight in pounds is _____ divided by 2.2 = _____ kg

d.) My height in inches is _____ divided by 39.4 = _____ meters

2. Using your answers in step one, complete the following calculation based on your gender and age.

Males, 19 + years old, use this calculation:

$$662 - (9.53 \times \text{_____} (a)) + (\text{_____} (b) \times 15.91 \times \text{_____} (c)) + (539.6 \times \text{_____} (d)) = \text{_____} \text{EER}$$

Females, 19+ years old, use this calculation:

$$354 - (6.91 \times \text{_____} (a)) + (\text{_____} (b) \times 9.36 \times \text{_____} (c)) + (726 \times \text{_____} (d)) = \text{_____} \text{EER}$$

Questions: (Read chapter 10 to answer the following questions)

1. Factors that affect body weight include:

1. _____
2. _____
3. _____
4. _____

2. Why are BMI and waist circumference not always good indicators of a healthy weight?

3. List three suggestions for those who want to gain weight:

1. _____
2. _____
3. _____

4. List three suggestions for those who want to lose weight:

1. _____
2. _____
3. _____

5. A university women's competitive swim team reported BMIs ranging from 27 to 30. Explain the validity or inaccuracy of the reading.