Nutrition and Health

by Sophia

WHAT'S COVERED

In this lesson, you will learn to identify components of nutrition. Specifically, this lesson will cover:

1. Nutrition

The important parts of your diet that can play a role in your body include vitamins, minerals, and nutrients.

1a. Vitamins

Vitamins are a diverse class of organic compounds that usually assist enzymes (in pretty much every metabolic function). Some molecules provide energy for the chemical reactions that make up a person's metabolism (such as ATP); some molecules serve as building units (the way amino acids do for the creation of proteins), and some molecules assist the enzymes that process all of the above. These last (assisting molecules) are vitamins. There are many different types of vitamins your body needs like Vitamin C, Vitamin D, Vitamin K, Vitamin E, to name a few.

↱ EXAMPLE Folic acid (one form of which is Vitamin B9) is a substrate used to make products such as DNA nucleotides. Insufficient amounts of folic acid during pregnancy are linked to increased instances of spina bifida, where part of the neural tube of the baby pokes out of the spine.

TERM TO KNOW

Vitamins

A diverse class of organic compounds that usually assist enzymes (in pretty much every metabolic function).

1b. Minerals

Minerals are inorganic substances. Examples of minerals would include calcium, iron, magnesium, et cetera.

↱ EXAMPLE Calcium is most often associated with dairy foods such as milk, cheeses, ice cream, but it can also be found though in green veggies and other foods. It's important for bone formation, blood clotting and for the functioning of the nervous system and muscles.

TERM TO KNOW

Minerals

Inorganic elements found in soil that are involved in almost every metabolic process of the human

body.

1c. Nutrients

Nutrients are carbohydrates, lipids, and proteins. Let's take a look at the different kinds of nutrients more in depth:

- **Carbohydrates** are necessary because they are broken down into glucose and then used by your body as an energy source. Complex carbs the most healthy type of carbohydrate (as opposed to simple carbohydrates).
- **Lipids** are also known as fats and they're needed for cell membranes, for energy, certain hormones and for cushioning of your organs. Some fats are healthier than others. Olive oil is an example of a healthy fat, whereas French fries would be an example of a food that contains unhealthy fat.
- **Proteins** are nutrients that are broken down into amino acids, which are then used to build new proteins (enzymes, hormones, cellular structures, etc.).

TERMS TO KNOW

Carbohydrates

A class of organic compounds that are the body's main source of energy; carbohydrates are sugars that can be found as monosaccharides (glucose), disaccharides (sucrose) and polysaccharides (starch).

Lipids

Long hydrophobic hydrocarbon chains that act as the body's main source of stored energy, along with other secondary functions.

Protein

Large, complex polymers of amino acids that have diverse functions (structure, communication, identity, immunity, carriers, etc.).

1d. Essential Fatty & Amino Acids

Essential fatty acids and **essential amino acids** also have to be obtained by our diet. Some types of fatty acids and some types of amino acids our body can make on its own, but not all. Those we cannot make have to come from our diet.

↱ EXAMPLE Essential amino acids are amino acids that our body cannot produce on its own. There are 20 amino acids; eight of them are essential. In other words, eight of those 20 cannot be made by the body itself, so we get those through our diet.

TERMS TO KNOW

Essential Fatty Acids

Fatty acids we cannot naturally synthesize are called essential fatty acids; since we cannot synthesize them, we must consume them in our diet.

Essential Amino Acids

Amino acids we cannot naturally synthesize are called essential amino acids; since we cannot synthesize them, we must consume them in our diet.

1e. Fiber

Fiber is another important element to have in our diet, even if it doesn't provide a lot of nutritional value. The

importance of fiber is to add bulk to help push food through our digestive system. Diverticulosis and hemorrhoids are examples of possible outcomes if our diet is lacking in fiber. There are various types of foods that have fiber in them, such as fruits and foods that have a lot of wheat.

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2. Health

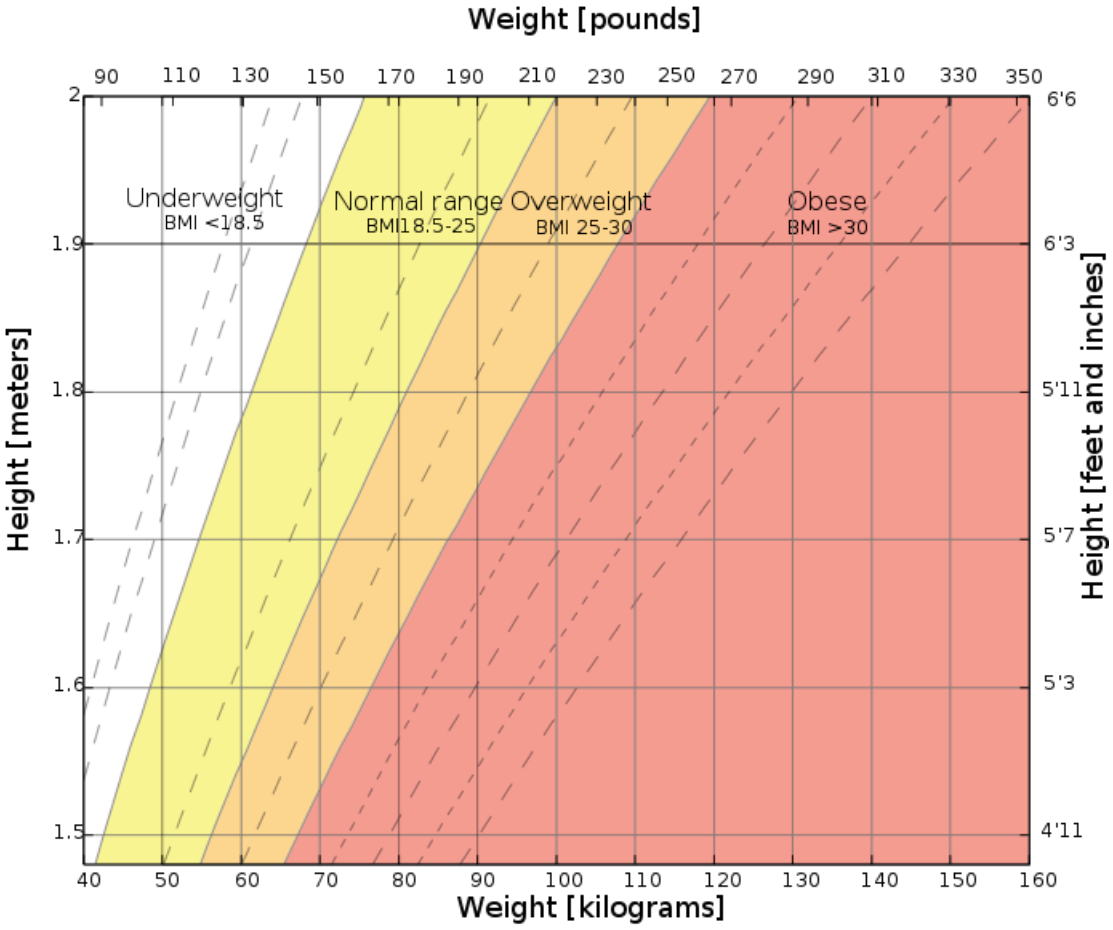
When referring to your health, BMI and BMR can provide information about body fat and healthy weight loss.

2a. BMI

BMI is a term that you've probably heard before, and it stands for is**body mass index**. It uses a person's height and weight to estimate the amount or the percentage of body fat that they have. There's an equation that goes along with it:

$$BMI = \frac{Weight(kg)}{Height(m)^2}$$

An easier way is just to use a BMI table:



TRY IT

Let's use this chart to see what zone someone who is 5’8” tall and weighs 135 lb would fall. Are they underweight, normal, overweight, or obese?

Since feet and inches are being used, start on the right-hand side of the chart to find the height. Move to the left until you reach the correct weight. This individual falls in the normal range. Use your own height

and weight to see where you fall.

TERM TO KNOW

Body Mass Index (BMI)

A measurement ratio of your height and weight to assess a person's body composition that is often used as a health and disease indicator.

2b. BMR

BMR stands for Basal Metabolic Rate and is the amount of energy, or calories, needed to sustain bodily functions. This rate is going to vary from person to person, depending on the person's size, their age, their activity level, et cetera. In fact, there are online calculators that ask you to input your height, weight, age, activity and so forth to give you an estimate of how many calories you need to consume to maintain your current weight.

THINK ABOUT IT

Question: Why would knowing your BMR be important when it comes to maintaining your health?

Answer: If a person wanted to lose weight, they would then find their BMR, or how many calories they would consume daily to maintain their current weight, and then they would eat fewer calories than that amount in order to lose weight. Losing one pound of fat is equal to about 3,500 cumulative calories being used versus consumed.

BIG IDEA

Having some fat in the body is important; it helps to cushion organs and helps to provide energy, but having too much fat in the body can be detrimental to health.

SUMMARY

Nutrition is very important for the proper functioning of our bodies. Our diet is the main way we take in many of the **vitamins**, **minerals**, and **nutrients** we need to live. Nutrients include carbohydrates, lipids, and proteins. **Essential fatty acids and essential amino acids** are those we can only get through our diet. **Fiber**, while not nutritionally valuable, is important for digestion. With your**health**, your **BMI** is a way to calculate the percentage of fat on your body. While fat is needed for our bodies to function properly, too much body fat is not good for you. **BMR** can tell you the amount of energy needed to sustain bodily functions.

Keep up the learning and have a great day!

Source: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR AMANDA SODERLIND

ATTRIBUTIONS

- BMI Table | **Author:** Wikipeda | **License:** Public Domain

TERMS TO KNOW

Body Mass Index (BMI)
A measurement ratio of your height and weight to assess a person's body composition that is often used as a health and disease indicator.

Carbohydrates
A class of organic compounds that are the body's main source of energy; carbohydrates are sugars that can be found as monosaccharides (glucose), disaccharides (sucrose), and polysaccharides (starch).

Essential Amino Acids
Amino acids we cannot naturally synthesize are called essential amino acids; since we cannot synthesize them, we must consume them in our diet.

Essential Fatty Acids
Fatty acids we cannot naturally synthesize are called essential fatty acids; since we cannot synthesize them, we must consume them in our diet.

Lipids
Long hydrophobic hydrocarbon chains that act as the body's main source of stored energy along with other secondary functions.

Minerals
Inorganic elements (often found in salts) that are involved in almost every metabolic process of the human body.

Obesity
Having too much body fat. This is not to be confused with being overweight, which means weighing too much. Obesity is a risk factor for many chronic diseases such as hypertension, type II diabetes, cardiovascular disease, etc.

Protein
Large, complex polymers of amino acids that have diverse functions (structure, communication, identity, immunity, carriers, etc.)

Vitamins
A diverse class of organic compounds that usually assist enzymes (in pretty much every metabolic function).