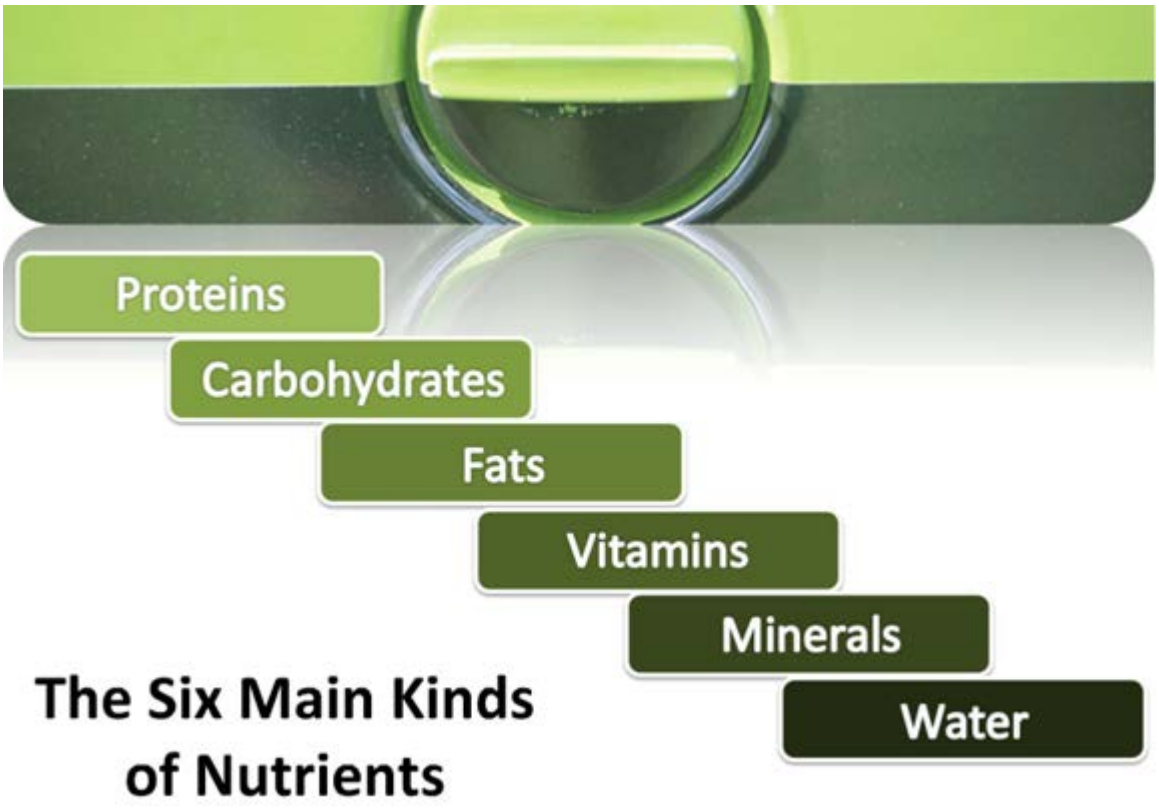
Module 1: The Perfect Machine
Topic 4 Content: Using Regular When You Need Premium

The Six Main Kinds of Nutrients



Premium fuel for your body contains six main nutrients: proteins, carbohydrates, fats, vitamins, minerals, and water.

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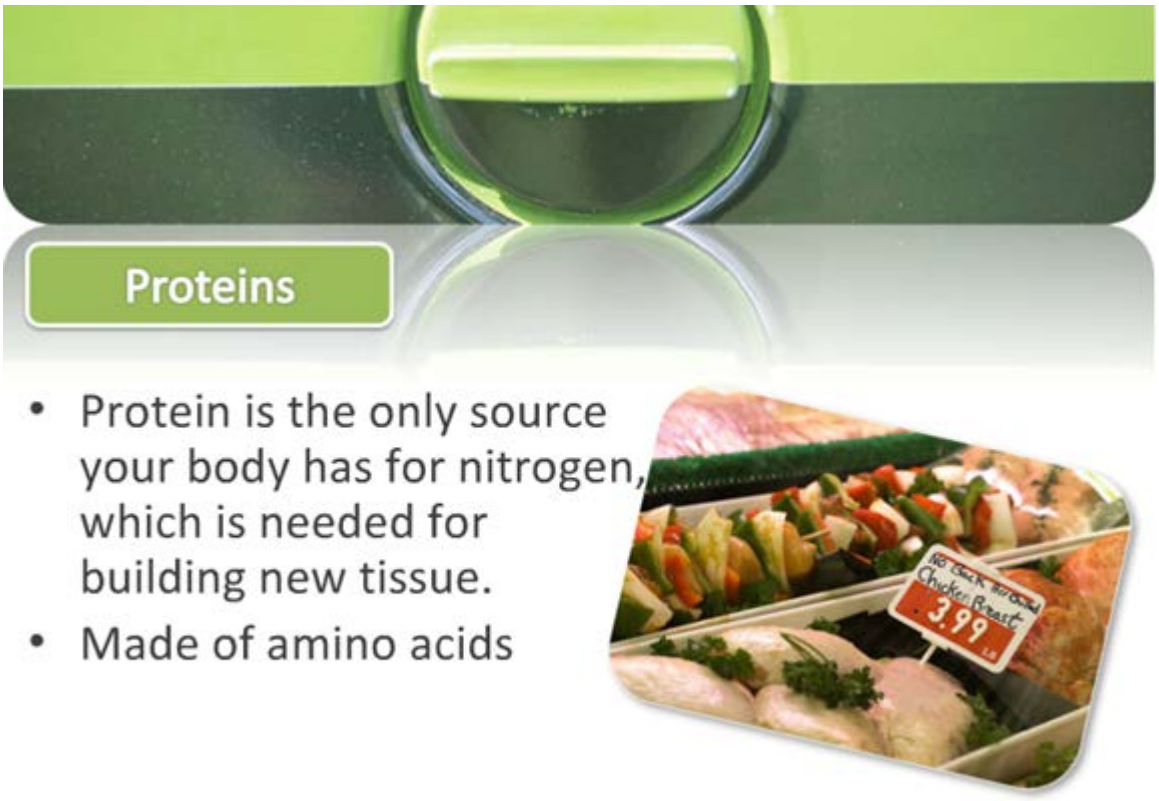
Proteins



Protein is an essential part of every cell in your body – the largest portion existing in the muscle tissue. You supply protein to your body cells by eating foods that contain protein. Protein is the only source your body has for nitrogen, which is needed for building new tissue. The chief component of every protein is a string of amino acids. The body extracts the amino acids from the proteins you eat and rearranges them into new proteins. These new proteins are then used by the body for growth and maintenance of body cells.

The human body needs about twenty-two amino acids to make these strings or links. Your body can convert some of these amino acids from other amino acids. Others are called essential amino acids because they must come as they are from the foods you eat.

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Carbohydrates

Once eaten, the body responds to carbohydrates by turning them into a type of sugar called glucose. This glucose is fuel for the body. All carbohydrates are made of links or strings of sugar. These strings are either simple or complex in nature.

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Simple Carbohydrates

Monosaccharides are the single-molecule sugars known as simple sugars. Glucose is a monosaccharide. Simple carbohydrates are found in foods such as candy, table sugar, honey, and maple syrup. Because their chemical make-up is similar to that of glucose, they do not take long to digest. They are quickly converted into glucose and immediately absorbed by cells.

As compared with complex carbohydrates, simple carbohydrates cause blood sugar levels to rise at a rapid rate. To control the effects of sugar in the blood, the body releases insulin, a hormone produced by the pancreas to help muscle cells utilize glucose. After the glucose has been absorbed, however, blood sugar levels can also fall at a rapid rate.

Eating simple carbohydrates can leave one feeling tired and sluggish and often craving more simple carbohydrates. The consumption of carbohydrates should be limited to complex carbohydrates.

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Complex Carbohydrates

Complex carbohydrates, or polysaccharides, are starches composed of many monosaccharide molecules and are broken down by the body into two or more sugars. Your body stores some glucose for emergencies, which is called glycogen. When your glucose and glycogen reserves are gone, you should eat. Otherwise, your body will begin turning some of your protein into glucose for energy. Complex carbohydrates have a higher nutritive value than simple sugars, and supply more fiber, which helps food and waste move through the intestines. Food sources high in complex carbohydrates often provide good sources of vitamins, minerals, and protein as well. These starches take more time to digest, so the feeling of being full or satisfied lasts longer.

Good sources of starches or complex carbohydrates are grains, beans, peas, and vegetables. Your diet should include a good amount of complex carbohydrates, while avoiding large or excessive amounts of simple carbohydrates.

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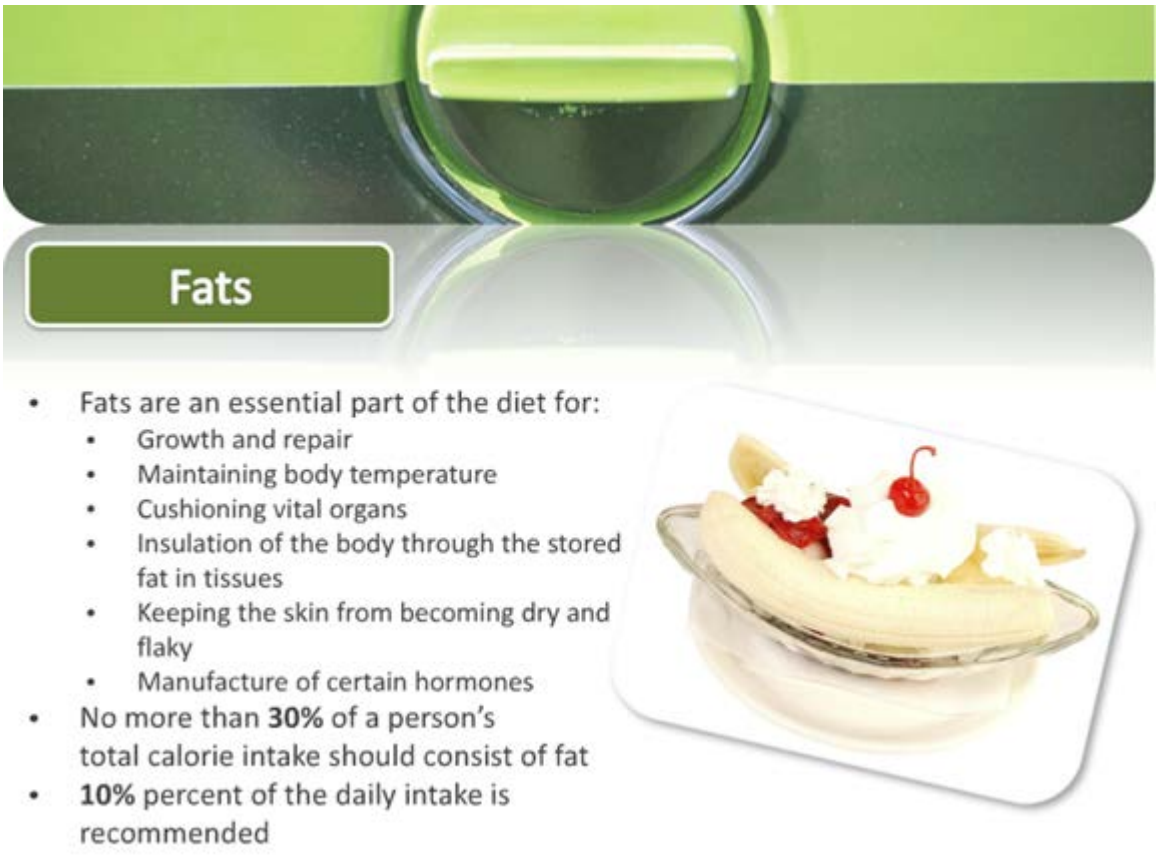
Fats



As carbohydrates are chains of glucose and proteins are chains of amino acids, a fat is a chain of fatty acids -- long molecules of carbon, hydrogen, and oxygen. In the body, fats provide a concentrated source of energy. They can provide more than twice as much energy as carbohydrates.

Most Americans eat far more fat than the body needs. A very important characteristic of fat is the degree of saturation.

Fat occurs naturally in all meat and dairy products. It makes ice cream creamy and steak juicy. No more than thirty percent of a person's total calorie intake should consist of fat. Ten percent of the daily intake is recommended.

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Saturated and Unsaturated Fats

But what about fat…is it good or bad? Foods containing fat should be chosen carefully. The two types of fat are saturated fat and unsaturated fat. The fat that makes steak melt in your mouth is a saturated fat. The intake of saturated fats should be limited because of their effect on blood cholesterol levels. Saturated fats increase a certain type of cholesterol known as low-density lipoprotein (LDLs) in the blood. When levels of LDLs are too high, they leave a plaque-like substance on the arteries, lessening the efficiency of the circulatory system. Having abnormally high levels of LDLs over a long period of time can lead to blockages in the arteries, which can ause strokes and heart attacks.

Unsaturated fats do not tend to elevate cholesterol levels. They are usually liquid at room temperature. Corn, cottonseed, and canola oils are examples of unsaturated fats.

Cholesterol is both good and bad for the body. The intake of unsaturated fats has been linked to the increase of another type of cholesterol known as high-density lipoproteins (HDLs). HDLs remove excess LDLs from the blood and artery walls. For this reason, nutritionists consider unsaturated fats to be beneficial to your health.

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Getting the Right Amount

Whether a fat is considered “good” or “bad,” it should be consumed in moderation. Diets high in fat tend to be low in other essential nutrients. To get the right amount of nutrients needed for proper growth and development, the average adolescent should consume no more than sixty-five to seventy grams of fat per day.

One way to reduce the amount of fat in your diet is to consume foods that are high in fiber. Because fiber is found in grains, vegetables, and fruits, sources of fiber are usually low in fat. Fibrous foods are also good sources of vitamins C, B6, and E. Diets that are high in fiber have been linked to proper bowel function, the reduction of cancer-causing agents, and normal body weight.

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Vitamins

Vitamins are essential for maintaining a healthy balance in the body systems. The best source of vitamins comes from the foods you eat. A healthy diet including foods eaten in their natural state, as well as foods that are stored and cooked properly, can provide much of your vitamin needs. Each individual's needs are different. Age, sex, heredity, illness, diet, stress, as well as the amount you exercise, all contribute to your body composition and needs.

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Minerals

Your body cannot manufacture the essential minerals; therefore, you must get them from the foods you eat. Although everyone needs minerals, there are certain times when your needs will change. During periods of growth, as well as during menstruation and pregnancy, minerals are vital to the proper development of the body.

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Water

The consumption of water helps keep your body's fluid in balance.

Water is also found in the foods you eat. By eating fruits and vegetables, you are consuming the highest amount of water other than by drinking it.

Generally, your body needs seven to ten eight-ounce glasses of fluid a day (in addition to the foods you eat) to stay in balance. If you are one who regularly exercises, then you need to drink more.

Water is essential to all forms of metabolism in the body. Consequently, water loss can cause health problems. The body loses approximately five to six pints of water a day through sweat, urine, and exhalation. This must be replenished in order for your body to function properly. Liquids containing caffeine or alcohol should be avoided. Caffeine and alcohol cause the body to urinate, making it dehydrated. Most sodas contain caffeine and should be kept to a minimum.

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Nutrients and Metabolism

The ability or inability of individual cells to convert nutrients into energy or materials has an effect on the body's overall health. Supplying your cells every day with the right amount of nutrients is the only thing that will enable your body to function properly. For example, eating either a candy bar or a banana with a glass of milk can take away your hunger. The banana and the glass of milk have the right balance of nutrients that your cells need in order to function efficiently. At first, eating a candy bar will make your cells undergo the process of catabolism, converting glucose to energy. You might even feel "hyper" or overly-energetic. Your energy, however, will soon fade, making you feel less energetic than you did before you ate the candy bar. Too much of one nutrient and not enough of another will cause your cells to function improperly.

The best choice would be the banana and glass of milk, since the two foods together supply your body with many essential nutrients in more of a balance than the sugar-laden candy bar.