



HIGH SCHOOL HEALTH 2

CONTENTS

I. BENEFITS OF PROPER NUTRITION	2
Nutrition	2
Vitamins and Mineral Sources	10
II. DEVELOPING PROPER EATING HABITS	17
MyPlate	17
Food, God’s Tasty Gift	26
Choosing the Right Foods	26
Healthy Eating Habits	29
III. EXERCISE AND PHYSICAL FITNESS	36
Exercise and Physical Fitness	36
Muscular Endurance and Strength	40
Beginning an Exercise Program	43

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Overview

What is physical health? Does physical health pertain only to people who exercise? Maybe you think it describes people who are conscious of eating only healthy food in the correct amounts. In this LIFEPAAC[®], we will learn that nutrition and exercise are essential to attaining and maintaining a healthy body, but clearly are not the only aspects of healthy living.

OBJECTIVES



When you have completed this LIFEPAAC, you should be able to:

- Understand the importance of good nutrition.
- Identify the best sources of specific nutrients and their benefits.
- Differentiate between good eating habits and poor eating habits.
- Understand the importance of exercise to maintaining health.
- Identify the benefits of specific exercises to various components of physical fitness.
- Understand the biblical perspective on diet and exercise.

VOCABULARY



Aerobic – dependent upon oxygen to function.

Anabolism – the process by which the cell uses nutrients to repair or build new tissues.

Anaerobic – not dependent upon oxygen to function.

Atrophy – the decrease in functionality of the body due to lack of use or poor nutrition.

Cardiovascular – relating to the circulatory system.

Calorie – the amount of heat needed to raise the temperature of one kilogram of water one degree Celsius.

Catabolism – the conversion of nutrients into energy.

Enzyme – an organic substance responsible for initiating chemical changes within the body.

Metabolism – the process by which a cell converts nutrients into energy or materials for growth, repair, reproduction, and maintenance.

Nutrients – chemical substances that are absorbed by the body through the process of digestion.

Nutrition – the proper supply of nutrients essential for growth, reproduction, repair, immunity, and energy.

I. NUTRITION AND EXERCISE

Do you think of yourself as physically healthy? If you said yes, is your answer based on the fact that you are involved in physically demanding sports like soccer, football, or hockey? Or, maybe you said yes because you're not overweight. Often, people that are physically active or who appear healthy assume that they are healthy. Your physical health is not only dependent upon the amount of exercise you do per week, but also on the food that you put in your mouth every day. **Nutrition** and exercise are essential to attaining and maintaining a healthy body.

Nutrition

The scientific definition of nutrition “the proper supply of **nutrients** essential for growth, reproduction, repair, immunity, and energy.” However, nutrition can be defined simply as “good eating habits.” Food is composed of nutrients such as carbohydrates, proteins, fats, vitamins, minerals, and water. Nutrients are chemical substances that are absorbed by the body through the process of digestion.

As explained in the first LIFEPAK, food is broken down by complex proteins, called **enzymes**, in the digestive tract. The digestive tract consists of the mouth, pharynx, esophagus, stomach, duodenum, small intestine, and large intestine. In the various organs of the digestive tract, specific enzymes are released to break down specific nutrients. For instance, the enzymes in your saliva that begin the break down of carbohydrates do not affect proteins. Likewise, enzymes in the stomach that contribute to the break down of proteins cannot affect the breakdown of carbohydrates.



Nutrients are broken down in order to prepare them for absorption into the bloodstream. Enzymes chemically alter the makeup of nutrients, changing them into forms that can be readily used by cells throughout the body. Carbohydrates are changed into a sugary substance known as glucose. Proteins are changed into amino acids. Fats are changed into fatty acids such as glycerol. Villi in the lining of the intestines absorb the altered nutrients. Fats, vitamins, and minerals are passed directly into the bloodstream to be absorbed by cells. Glucose and amino acids are transported to the liver, where more enzymes prepare the nutrients for absorption by cells.

Metabolism. After a nutrient is absorbed by a cell, it is metabolized. Metabolism is the process by which a cell converts nutrients into energy or materials. The conversion of nutrients into energy is called **catabolism**. For example, glucose is the cell's main source of energy. When it is combined with oxygen, it produces a chemical reaction that results in the formation of energy for the cell. Any movement of the body requires the metabolism of glucose. When you move your arm or your leg, you are causing a number of cells to undergo the process of catabolism.

Anabolism is the process by which the cell uses nutrients to repair or build new tissues. For example, when a cell is damaged by infection or disease, amino acids and fats are used like building materials to repair cell structures. The maintenance of healthy tissues is dependent upon the presence of amino acids and fats in the body. Vitamins and minerals also play an important part in the facilitation of catabolism and anabolism.

Because the body is made up of many cells, the ability or disability 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. As we study the various nutrients, you will discover what foods are best for catabolism and anabolism. In other words, you will realize why eating a banana with a glass of milk is better for you than eating a candy bar.



Answer the following questions with short answers.

- I.1 What is the scientific definition of nutrition? _____

- I.2 List six nutrients that are found in food. _____

- I.3 What are nutrients? _____

- I.4 Briefly explain the role of enzymes in digestion. _____



Match each definition with the correct word.

- I.5 _____ The process by which a cell converts nutrients into energy or materials. a. anabolism
- I.6 _____ The conversion of nutrients into energy. b. catabolism
- I.7 _____ The cell's main source of energy. c. metabolism
- I.8 _____ The process by which the cells uses nutrients to repair or build new tissues. d. glucose

Water. The basis of good nutrition is water. Without it, the body cannot survive for more than a couple of days. Eight to ten cups of it must be ingested every day in order to maintain the right level of hydration. This might seem like a lot, but your body is over 60 percent water. Your blood, brain, joints, organs, skin, and even bones depend on water to function properly. The blood is over 80 percent water. Water in the blood enables nutrients, white blood cells, oxygen, carbon dioxide, and hormones to move smoothly through the circulatory system. The brain is nearly 75 percent water. Water in the tissues of the brain enable electrical impulses to travel from one nerve cell to the next. Bones are approximately 20 percent water. The water found in bones facilitates the growth and repair of bone tissue.



Water is essential to all forms of metabolism in the body. Consequently, water loss can cause health problems. The body loses approximately 5–6 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. Water from your faucet or a bottle is the best source of fluids. You can also get water by eating foods that have a high water content. Fruits and vegetables are approximately 90 percent water. Eating an apple or an orange is a good way to replenish your body's supply of water.



Answer the following statements true or false.

- I.9 _____ Water is the basis of good nutrition because it is essential to all forms of metabolism in the body.
- I.10 _____ The body can survive 8–10 days without water.
- I.11 _____ The body is less than 20 percent water.
- I.12 _____ The best source of water is soda with caffeine.
- I.13 _____ The body loses approximately 5–6 pints of water a day through sweat, urine, and exhalation.



Carbohydrates. Apples and oranges are good sources of carbohydrates. Carbohydrates are the body's primary and immediate source of energy. Each gram provides the body with 4 calories. A **calorie** is the amount of heat needed to raise the temperature of 1 kilogram of water 1 degree Celsius. Calories are a scientific measurement of fuel. If you were to walk for an hour, for example, you would burn approximately 200 calories. That means various cells in your body would need to convert 50 grams of carbohydrates into glucose to provide the energy needed to walk an hour.

Carbohydrates are “burned” in the form of glucose when oxygen and carbon unite. During digestion, carbohydrates are converted by enzymes into glucose. Glucose is then absorbed by cells and used for energy during metabolism. Unused glucose is sent to muscle cells and fat cells, where it is stored for later use as fuel. In muscle cells, glucose is

stored as glycogen, a form of starch. In fat cells, it is stored as fat.

Carbohydrates exist in abundance in foods that contain starch and sugar. Foods such as pasta, bread, corn, potatoes, beans, fruits, table sugar, honey, and candy are high in carbohydrates. However, not all carbohydrates affect the body in the same way. Complex carbohydrates require a prolonged process of digestion in order to be broken down into glucose. This extended process helps to maintain proper “blood sugar” levels.

Foods that contain complex carbohydrates include the following:

- whole-grain breads and cereals
- naturally occurring sugars found in fruit and dairy products
- pasta
- vegetables like potatoes and corn
- beans

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. However, after the glucose has been absorbed, blood sugar levels can also fall at a rapid rate. Eating simple carbohydrates can leave one feeling tired and sluggish and often craving for more simple carbohydrates. The consumption of carbohydrates should be limited to complex carbohydrates.

Returning to our earlier example, eating a banana with milk is better for you than eating a candy bar. The banana and the milk both contain complex carbohydrates with little amounts of simple carbohydrates. The candy bar, however, is loaded with simple carbohydrates, which will cause your blood sugar levels to rise and then fall. The banana and the milk also contain other essential nutrients that help stabilize blood sugar levels.

Food/Drink per Serving	Total Carbohydrates	Sugars	Fibers
Dr. Pepper®	27 grams	27 grams	0 grams
Coca Cola®	27 grams	27 grams	0 grams
Pepsi®	27 grams	27 grams	0 grams
Mountain Dew®	31 grams	31 grams	0 grams
Pop-Tarts® (frosted Cherry)	38 grams	19 grams	1 gram
Frosted Flakes® (cereal)	28 grams	12 grams	1 gram
Fruit Loops®	28 grams	15 grams	1 gram
Cocoa Puffs®	26 grams	14 grams	0 grams
Cap’N Crunch®	23 grams	12 grams	1 gram
Jell-O® Pudding Snacks (Chocolate)	28 grams	22 grams	1 gram
Jell-O® Gelatin Snacks (Strawberry)	17 grams	17 grams	0 grams
Fudgesicles®	17 grams	4 grams	1 gram
Hostess Twinkies®	25 grams	14 grams	0 grams
Hostess Cup Cakes®	30 grams	17 grams	1 gram
Fig Newtons®	22 grams	12 grams	1 gram
Oreo® cookies	23 grams	13 grams	1 gram
Chips Ahoy!® cookies	21 grams	10 grams	1 gram





Fill in the blanks.

- I.14 _____ are the body's primary and immediate source of energy.
- I.15 A _____ is the amount of heat needed to raise the temperature of 1 kilogram of water 1 degree Celsius.
- I.16 During digestion, carbohydrates are converted by enzymes into _____ .
- I.17 Unused glucose that is converted to _____ is stored in muscle cells.
- I.18 Carbohydrates are found in foods that contain _____ and _____ .
- I.19 _____ carbohydrates require a prolonged process of digestion in order to be broken down into glucose and help maintain proper blood sugar levels.
- I.20 _____ carbohydrates do not take long to digest and cause blood sugar levels to rise quickly.



Fats/Oils. Another source of energy is fat. Fat is the most concentrated form of energy, yielding 9 calories per gram. Because of its role in the absorption of vitamins, the protection of vital organs, and the digestion of other foods, fat is essential to good health.

There are two types of dietary fats, saturated and polyunsaturated/monounsaturated. Dietary fats are fats that are eaten, as opposed to the fat found in your body. Saturated fats remain solid at room temperature and are found in animal products such as meat, cheese, lard, and butter, and some plant oils such as coconut oil and palm kernel oil. Research has indicated that saturated fats contribute to increased unhealthy overall cholesterol levels and are responsible for increasing low-density lipoproteins (LDLs) levels in the blood. Saturated fats are included in the discretionary calorie allowance in the 2005 Food Pyramid. Oils remain liquid at room temperature and contain polyunsaturated/monounsaturated fats. These oils are found in vegetables or nuts such as olives, sunflower seeds, avocados, and corn.

Certain fatty acids are termed "essential" because they cannot be produced by the body. Therefore, eating foods that contain oils are vital to good health. Polyunsaturated (PUFA) and monounsaturated (MUFA) fats contain essential fatty acids. Fatty acids are organic acids that aid in the transportation and breakdown of cholesterol. Oils have been linked to the increase of high-density lipoproteins (HDLs) cholesterol which help to carry away excess LDLs cholesterol. If too much LDL builds up in the blood, it begins to adhere to the body's artery walls. Eventually this buildup can contribute to blockages in the arteries, and lead to a stroke or heart disease. Healthy levels of cholesterol are necessary for the body to synthesize Vitamin D, to maintain the proper functioning of nerve cells, to keep skin soft and supple, and to transport fat to cells.

Oils are also essential to the absorption of Vitamins A, D, E, and K, and play a crucial role in the development of healthy bones, teeth, and skin. Any fats that are consumed (unsaturated or saturated) beyond the body's needs are stored beneath the skin. The layer helps to insulate the body from extreme temperatures and protect organs and bones from injury.

Protein. Every cell, every tissue, and every organ consists mainly of protein. It is the second most abundant substance in the body. Protein is essential to cellular construction, reproduction, and maintenance. It can also be used for energy. This is only necessary, however, if carbohydrate and fat stores are depleted.

Proteins consist of smaller units known as amino acids. There are 22 different amino acids utilized by the body, eight of which must be derived from food sources. The eight amino acids are considered “essential!”

A protein source that contains all the essential amino acids is considered a “complete protein.” Some of the best sources of complete proteins are found in animal proteins. Plant sources can also supply complete protein, making sure the combination of these sources contain all the essential amino acids. Although meat is a complete protein source, it is important to limit the amount of meat eaten due to the saturated fat that accompanies the protein. As with any part of a complete diet, balance is important to successfully build, repair, and maintain a healthy body.



Underline the correct answer.

- I.21 (Carbohydrates, Fats, Water) is/are the most concentrated form of energy.
- I.22 (Saturated, polyunsaturated/monounsaturated) fats are found in animal products and some vegetables.
- I.23 (Fatty acids, Amino acids, Vitamins) are organic acids that aid in the transportation and breakdown of cholesterol.
- I.24 (Carbohydrates, Cholesterol, Protein) is/are used by the body to synthesize Vitamin D, maintain the proper functioning of nerve cells, keep skin soft and supple, and transport fat to cells.
- I.25 Vitamins A, D, E, and K are dependent upon (proteins, carbohydrates, oils) for their absorption by cells.
- I.26 Excess fat, whether saturated or unsaturated, is stored as (glycogen, glucose, fat).



Matching.

- | | | |
|------|---|--------------------------|
| I.27 | _____ The nutrient that is essential to cellular construction, reproduction, and maintenance. | a. complete protein |
| I.28 | _____ Proteins that cannot be manufactured by the body and must be derived from food sources. | b. essential amino acids |
| I.29 | _____ Food source that contains all the essential amino acids. | c. incomplete proteins |
| I.30 | _____ Food sources that do not contain all the essential amino acids. | d. protein |



Vitamins. Vitamins are chemicals that are essential to all cellular activity. Without vitamins, the body cannot convert carbohydrates and fats into energy; it cannot repair and construct new cells; nor, can it carry out normal functions such as thinking and breathing. Out of the twenty vitamins that are essential to human nutrition, the body can produce only a few. Vitamin-rich foods must be eaten to maintain the proper proportions needed for good health.

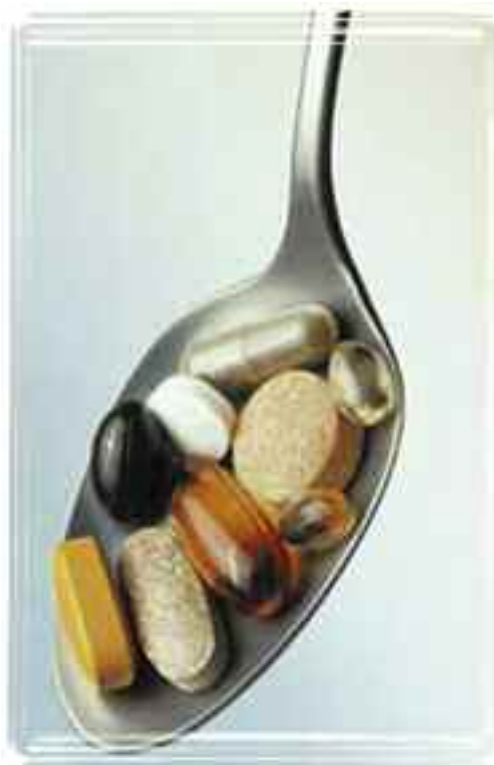
Vitamins can be grouped into two categories, fat-soluble and water-soluble. Fat-soluble vitamins are dependent upon fats for absorption into the bloodstream. They are stored in fat cells found in the liver, kidneys, and wherever other fat tissue is found. Because they can be stored, it is not essential that fat-soluble vitamins be ingested daily. In fact, taking more fat-soluble vitamins than are needed by the body can be harmful. This usually occurs when someone is taking vitamin supplements. To avoid taking toxic levels of fat-soluble vitamins, do not exceed the

Recommended Dietary Allowances (RDA) which are listed on vitamin bottles. The RDA for nutrients is published by the Food and Nutrition Board of the National Research Council. Fat-soluble vitamins include Vitamins A, D, E, and K.

Water-soluble vitamins include Vitamins C, B₁₂, and B complex vitamins. With the exception of B₁₂, the body stores water-soluble vitamins for a very short period of time. The body rids itself of excess amounts through urination, so water-soluble vitamins must be ingested daily, according to the suggested RDA.

The precise role of vitamins in cellular activities is not really understood. What we do know is that some vitamins work with enzymes to initiate chemical reactions within the cell. For example, Vitamin C is known to play an essential role in the reproduction of bone tissue. On the cellular level, Vitamin C works with certain enzymes to produce new bone cells.

Food sources of vitamins include plants and animals. Vitamins are only found in living things; however, there is not one food source that can provide all the vitamins needed for growth and development of a healthy body. A variety of foods, therefore, must be eaten. For example, potatoes are a good source of Vitamin C, but they are not a good source of Vitamin D. Restricting a diet to foods that are limited in their vitamin content or variety can lead to deficiencies. Because vitamins are essential to the body's utilization of energy, deficiencies can cause a wide range of health problems, ranging from brittle fingernails to heart failure. The seriousness of the effects is due mostly to the length of time that a person has had a deficiency. Cells can function for a period of time without the needed vitamins. Cases of life-threatening deficiencies are rare in nations such as the United States because of the abundance of food sources available to people of all economic levels.



Complete the following questions with short answers.

1.31 Explain why vitamins are essential to good health. _____

1.32 What is the basic difference between fat-soluble and water-soluble vitamins? _____

I.33 What is the known role of vitamins within the cell? _____

I.34 What is the best way to get the right amount of vitamins needed for proper growth and development?



Minerals. Similar to vitamins, minerals play an essential role in cellular activity. They function with enzymes to build new cells, repair damaged ones, and utilize energy. More specifically, they are used to build teeth, bones, muscles, and nerve cells, and to maintain the correct functioning of the heart and the brain.

There are 13 minerals used by the human body to maintain health. They can be divided into “macro-elements” and “trace elements.” Macro-elements are so called because they are needed by the body in “macro” or relatively large amounts for good health. They include calcium, chlorine, magnesium, phosphorus, potassium, sodium, and sulfur. Trace elements include chromium, copper, fluoride, iodine, iron, selenium, and zinc. Trace elements are needed by the body in small amounts, but are vitally important to good health. For example, chromium is found in concentrations of 20 parts per 1 billion parts of blood, yet a deficiency can cause serious problems with the body’s ability to convert glucose to energy.

Proper amounts of both trace elements and macro-elements can be derived from eating a balanced diet. In some cases, supplements are needed. Pregnant women and growing children need to pay particular attention to their mineral intake. Proper amounts and proportions are needed in order to ensure normal rates of growth and development.



Fill in the blanks.

I.35 There are 13 _____ used by the human body to maintain health.

I.36 _____ are needed by the body in large amounts in order to maintain good health.

I.37 _____ are needed by the body in small amounts.

Vitamins & Minerals: Sources, Benefits, and RDA

Vitamin	Good Sources	Benefits*	RDA Men/Women ages 15-18
Fat-soluble			
Vitamin A	Fish-liver oils, carrots, butter, green leafy vegetables, egg yolks, cheese	Normal eyesight, strong bones and teeth, healthy skin, protects against respiratory, digestive, and urinary tract infection	5000/4000 iu
Vitamin D	Fortified milk, tuna, salmon, egg yolks	Aids the absorption of calcium, strong teeth and bones, healthy nervous system	400/400 iu
Vitamin E	Vegetable oils, nuts, sunflower seeds, wheat germ oil, soybeans, egg yolks, meat, green leafy vegetables	Prevents heart disease, protects against respiratory ailments, aids blood flow, helps repair burned or scarred tissues	15/12 iu
Vitamin K	Green leafy vegetables, milk, yogurt, fish-liver oils, vegetable oils, egg yolks	Normal blood clotting	70–140/70–140 mcg
Water-soluble			
Thiamine (Vitamin B ₁)	Wheat germ and bran, whole grain rice, fish, beans, pork, liver, pasta, nuts	Normal heart rate, healthy nervous and muscular system, proper utilization of energy	1.5/1.1 mg
Riboflavin (Vitamin B ₂)	Milk, cheese, liver, eggs, green leafy vegetables, brewer's yeast	Normal eyesight, healthy skin, hair, and nails	1.8/1.3 mg
Niacin (nicotinic acid)	Lean meat, fish, chicken, peanuts, whole-grain bread	Reduces high blood pressure, lowers cholesterol levels, healthy skin, normal digestive processes	20/15 mg
Pantothenic acid	Organ meats (heart, liver, kidney), fish, egg yolks, vegetables, whole-grain cereals	Healthy adrenal glands, normal skin, healthy digestive system, normal hormone and cholesterol production	5–10/5–10 mg

Pyridoxine (Vitamin B ₆)	Liver, pork, fish, chicken, whole grain bread, potatoes	Healthy blood, normal functioning of nervous system	2.0/1.5 mg
Biotin	Egg yolks, liver, mushrooms, peanuts, watermelon, grape- fruit, dried beans	Normal production of fatty acids, healthy functioning of excretory system	150–300/150–300 mcg
Folic acid	Green leafy vegetables (spinach and kale), broccoli, liver, nuts, mushrooms	Production of red blood cells, protection from intestinal ailments, normal functioning of nervous system	0.4/.04 mg
Vitamin B ₁₂	Lean meats, liver, fish, eggs, dairy products	Normal growth and development, healthy functioning of nervous system, proper utilization of energy	2.0/2.0 mcg
Vitamin C	Fresh citrus fruits, vegetables	Healthy skin, bones, teeth, ligaments, and blood, increases immunity, helps heal wounds	60/60 mg



Mineral	Good Sources	Benefits*	RDA
Macro-elements			
Calcium	Milk and other dairy products	Healthy bones and teeth, normal heart rate	1200/1200mg
Iodine	Milk and other dairy products, fish, seafood, kelp, iodized salt	Normal growth and development, efficient utilization of energy sources	150/150mg
Iron	Beef, liver, leafy green vegetables, eggs, fish, whole-grain breads and cereals, legumes	Healthy functioning of muscles and blood	12/15 mg
Magnesium	Milk, green vegetables, fish, wheat germ, nuts, legumes, seafood, corn, whole grain bread	Healthy functioning of heart, nerves, and muscles, proper bone development	400/300 mg
Phosphorus	Beef, chicken, fish, eggs, milk, and other dairy products, nuts, green vegetables, whole-grain breads and cereals	Proper bone growth, normal functioning of heart and kidneys	1200/1200 mg
Selenium	Beef, fish, milk, and other dairy products, brewer's yeast, whole grain breads and cereals	Aids in the regulation of blood pressure	50/50 mcg
Zinc	Beef, whole-grain breads and cereals, seafood, eggs, milk, and other dairy products	Proper digestion and absorption of nutrients, aids healing	15/12 mg
Trace elements			
Chromium	Brewer's yeast, beef, whole-grain breads and cereals, cheese, beets, mushrooms	Normal blood sugar levels	50-200/50-200 mcg
Copper	Beef, liver, fish, green leaf vegetables, nuts, whole grain breads, legumes.	Healthy bones, muscles, and blood; aids healing	1.5-3.0/1.5-3.0 mg
Fluoride	Fish, meat, tea, fluorinated water	Healthy teeth and bones	1.5-4.0/1.5-4.0 mg
Potassium	Potatoes, bananas and other fruits, whole-grain breads and cereals, legumes, green vegetables	Healthy skin, normal functioning of kidneys, proper growth and development	2000/2000 mg
Sodium	Beef, chicken, seafood, milk and dairy products, salt, whole-grain breads and cereals	Healthy blood, proper functioning of nerves and muscles, normal water balance	500/500 mg

FAVORITE FOODS	VITAMINS OR MINERALS	HEALTH BENEFITS

I.38 Judging from your findings, which of your favorite foods is the most beneficial to your health, and why?

I.39 Do any of your favorite foods benefit the growth of bones and teeth? If so, which one(s)? _____

I.40 Do any of your favorite foods aid the growth of strong muscles? If so, which one(s)? _____



Adult Check _____

Initial

Date



Review the material in this section in preparation for the Self Test. The Self Test will check your mastery of this particular section. The items missed on this Self Test will indicate specific areas where restudy is needed for mastery.

SELF TEST I

Answer the following questions with short answers (each answer, 4 points).

I.01 What is the scientific definition of nutrition? _____

I.02 List six nutrients that are found in food.
a. _____ b. _____
c. _____ d. _____
e. _____ f. _____

I.03 What are nutrients? _____

I.04 Briefly explain the role of enzymes in digestion. _____

I.05 Explain briefly why vitamins are essential to good health. _____

I.06 What is the basic difference between fat-soluble and water-soluble vitamins? _____

Match the following items (each answer, 2 points).

- | | | | |
|-------|-------|--|--------------------------|
| I.07 | _____ | the process by which a cell converts nutrients into energy or materials | a. anabolism |
| I.08 | _____ | the conversion of nutrients into energy | b. catabolism |
| I.09 | _____ | the cell's main source of energy | c. complete protein |
| I.010 | _____ | the process by which the cells uses nutrients to repair or build new tissues | d. essential amino acids |
| I.011 | _____ | the nutrient that is essential to cellular construction, reproduction, and maintenance | e. glucose |
| I.012 | _____ | proteins that cannot be manufactured by the body and must be derived from food sources | f. incomplete proteins |
| I.013 | _____ | food source that contains all the essential amino acids | g. metabolism |
| I.014 | _____ | food sources that do not contain all the essential amino | h. protein |

Answer the following questions with *true* or *false* (each answer, 2 points).

- I.015 _____ Water is the basis of good nutrition because it is essential to all forms of metabolism in the body.
- I.016 _____ The body cannot survive more than a couple of days without water.
- I.017 _____ The body is less than 20 percent water.

- I.018 _____ The best source of water is liquids that contain caffeine.
- I.019 _____ The body loses approximately 5–6 pints of water a day through sweat, urine, and exhalation.

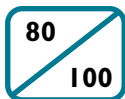
<i>calorie</i> <i>carbohydrates</i>	<i>complex</i> <i>glucose</i>	<i>macro-elements</i> <i>minerals</i>	<i>simple</i> <i>starch</i>	<i>sugar</i> <i>trace elements</i>
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Using the words above, complete the following sentences (each answer, 2 points).

- I.020 _____ are the body's primary and immediate source of energy.
- I.021 A _____ is the amount of heat needed to raise the temperature of 1 kilogram of water 1 degree Celsius.
- I.022 During digestion, carbohydrates are converted by enzymes into _____ .
- I.023 Carbohydrates are found in foods that contain _____ and _____ .
- I.024 _____ carbohydrates require a prolonged process of digestion in order to be broken down into glucose, and therefore, help maintain proper blood sugar levels.
- I.025 _____ carbohydrates do not take long to digest, and therefore, cause blood sugar levels to rise quickly.
- I.026 There are 13 _____ used by the human body to maintain health.
- I.027 _____ are needed by the body in large amounts in order to maintain good health.
- I.028 _____ are needed by the body in small amounts.

Underline the correct answer (each answer, 2 points).

- I.029 (**Saturated, polyunsaturated/monounsaturated**) fats are found in animal products and some vegetables.
- I.030 (**Fatty acids, Amino acids, Vitamins**) are organic acids that aid in the transportation and breakdown of cholesterol.
- I.031 (**Carbohydrates, Cholesterol, Protein**) is/are used by the body to synthesize Vitamin D, maintain the proper functioning of nerve cells, keep skin soft and supple, and transport fat to cells.
- I.032 Vitamins A, D, E, and K are dependent upon (**proteins, carbohydrates, oils**) for their absorption by cells.
- I.033 Excess fat, whether saturated or polyunsaturated/monounsaturated, is stored as (**glycogen, glucose, fat**).



	Score	_____
	Adult Check	_____
	Initial	Date