# Nutrition Science Digital Study Guide



## Why what we know about what we eat matters?



"If you're not a nutrition expert, you probably think you're doing yourself a favor by cooking with healthy coconut oil and avoiding slathering's of fattening peanut butter — but actual nutrition experts would disagree (**Downing**, **2017**, **p**. **1**)".

### The Digestive System

"Your digestive system is uniquely constructed to perform its specialized function of turning food into the energy you need to survive and packaging the residue for waste disposal ("The Structure and Function of the Digestive System," n.d, p. 1) "

Mouth	Esophagus	Stomach	Small intestine	Pancreas	Liver	Gallbladder	Colon	Rectum	Anus
The mouth is the beginning of the digestive tract; and, in fact, digestion starts here when taking the first bite of food. Chewing breaks the food into pieces that are more easily digested, while saliva mixes with food to begin the process of breaking it down into a form your body can absorb and use.	Located in your throat near your trachea (windpipe), the esophagus receives food from your mouth when you swallow. By means of a series of muscular contractions called peristalsis, the esophagus delivers food to your stomach.	The stomach is a hollow organ, or "container," that holds food while it is being mixed with enzymes that continue the process of breaking down food into a usable form. Cells in the lining of the stomach secrete a strong acid and powerful enzymes that are responsible for the breakdown process. When the contents of the stomach are sufficiently processed, they are released into the small intestine.	Made up of three segments - the duodenum, jejunum, and ileum - the small intestine is a 22- foot long muscular tube that breaks down food using enzymes released by the pancreas and bile from the liver. Peristalsis also is at work in this organ, moving food through and mixing it with digestive secretions from the pancreas and liver. The duodenum is largely responsible for the continuous breaking-down process, with the jejunum and ileum mainly responsible	The pancreas secretes digestive enzymes into the duodenum, the first segment of the small intestine. These enzymes break down protein, fats, and carbohydrates. The pancreas also makes insulin, secreting it directly into the bloodstream. Insulin is the chief hormone for metabolizing sugar	The liver has multiple functions, but its main function within the digestive system is to process the nutrients absorbed from the small intestine. Bile from the liver secreted into the small intestine also plays an important role in digesting fat. In addition, the liver is the body's chemical "factory." It takes the raw materials absorbed by the intestine and makes all the various chemicals the body needs to function. The liver also detoxifies potentially harmful chemicals. It breaks	The gallbladder stores and concentrat es bile, and then releases it into the duodenum to help absorb and digest fats.	The colon is a 6- foot long muscular tube that connects the small intestine to the rectum. The large intestine is made up of the cecum, the ascending (right) colon, the transverse (across) colon, the descending (left) colon, and the sigmoid colon, which connects to the rectum. The appendix is a small tube attached to the cecum. The large intestine is a highly specialized organ that is responsible for processing waste so that emptying the bowels is easy and convenient	The rectum (Latin for "straight") is an 8-inch chamber that connects the colon to the anus. It is the rectum's job to receive stool from the colon, to let the person know that there is stool to be evacuated, and to hold the stool until evacuation happens. When anything (gas or stool) comes into the rectum, sensors send a message to the brain. The brain then decides if the rectal contents can be released or not.	The anus is the last part of the digestive tract. In is a 2-inch long canal consisting of the pelvic floor muscles and the two ana sphincters (internal and external). The lining of the upper anus is specialized to detect rectal contents. It lets you know whether the contents are liquid, gas, or solid. The anus is surrounded by sphincter muscles that are important in allowing control of stool.
			nutrients into the		many drugs.		convenient.		

bloodstream.



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## Lipids

Lipids include fats (solid at room temperature) and oils (liquid at room temperature).

Lipids are an important part of a healthy diet. The body uses lipids as an energy store, as insulation and to make cell membranes.

Lipids are formed of carbon, hydrogen and oxygen atoms. There are two types of lipids:

- **Fats** These are solid at room temperature. Butter and cheese are high in fat.
- Oils These are liquid at room temperature. Examples include oils from nuts, seeds and fish.

#### How does the body use lipids?

Every cell in your body has a cell membrane which is made of lipids. Some hormones, including sex hormones, are made from a lipid called cholesterol. Fat is also an important energy store for the body. The layer of fat under your skin provides insulation and thin layers of fat protect vital organs.

#### How much do you need?

Lipids are an essential component of a balanced diet. In the body, lipid molecules can be broken down to make smaller molecules of fatty acids and glycerol.

Some fatty acids, called essential fatty acids, are vital for health. They can be found in foods such as nuts, seeds or fish. ("What are lipids, oils and fats?," n.d, p. 1)

#### Saturated Fat

- (Animal Source)
- Impact on HDL and LDL

#### Trans fat

- Processed
- Impact on HDL and LDL

Unhealthy fats

Monounsaturated fat: 15% to 20%
Polyunsaturated fat: 5% to 10%
Saturated fat: less than 10%
Trans fat: 0%
Cholesterol: less than 300 mg per day" ("Fat: What You Need to Know," 2014, p. 1)

#### Not all fats are created equal

- Monounsaturated fatty acids.
  - Improve blood cholesterol
  - Polyunsaturated fatty acids
    - Plant Based
    - Improve blood cholesterol
  - Omega-3 fatty acids

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Beneficial for heart health

### Healthier fats

### Fluids and Electrolytes

Why	is
fluid	intake
impo	rtant?

- □1. It lubricates the joints
- 2. It forms saliva and mucus
- 3. It delivers oxygen throughout the body
- 4. It boosts skin health and beauty
- 5. It cushions the brain, spinal cord, and other sensitive tissues
- 6. It regulates body temperature
- 7, The digestive system depends on it
- 8. It flushes body waste
- $\Box$ 9. It helps maintain blood pressure
- 10. The airways need it
- 11. It makes minerals and nutrients accessible
- 12. It prevents kidney damage
- 13. It boosts performance during exercise
- 14. Weight loss
- 15. It reduces the chance of a hangover (Cross, 2018, p. 1)

		Nausea and	vomiting.		
		Headache.	U		
Conditions		Confusion.			
		Loss of energy, drowsiness and			
		fatigue.			
		Restlessness	and irritability.		
		Muscle weakness, spasms or			
Overhydration -		cramps.			
(Hyponatremia)	□ Seizures.				
		Coma.			
	_				
		dizziness			
Dehydration		weakness			
丨 (Hyperthermia) 🧮		nausea			
		thirst	("Hyponatremia,"		
		a headache	n.d, p. 1)		

## Vitamins: to Take or not to Take



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