

MAKING RESPONSIBLE FOOD CHOICES

Chapter 5 Lesson 2

WHAT NUTRIENTS DO WE NEED TO FUEL OUR BODIES?

- These Nutrients: Provide energy, Keep us alert, Regulate body process, and build, repair and maintain muscle functions
 - Carbohydrates
 - Fats
 - Proteins
 - Minerals
 - Vitamins
 - Water

CARBOHYDRATES

- Are the bodies preferred source of energy or calories
- Kinds:
 - Sugar
 - Starches
 - Fiber
- Sugars
 - Fructose - can be found in fruit
 - Lactose - can be found in milk
 - Maltose - can be found in grain
 - Sucrose - table sugar
- Starches
 - Complex Carbohydrates - digestion breaks down into glucose (simple sugar) and is absorbed into the blood stream

ROLES OF CARBOHYDRATES

- Most important source of energy
 - 55-60% of our diet is made up of carbohydrates
- Found mainly in plant sources of food
- Carbs allow protein to be used for building and repairing the body
 - When protein is used for energy it cannot be used for other purposes.
- Body stores and converts excess carbohydrates as body fat.
 - Body breaks carbs into glucose → glucose goes into the bloodstream → glucose that is not used stores in the liver as glycogen → your glycogen reserves can then be used again as energy (glucose)

SOURCES OF CARBOHYDRATES

- Complex Carbohydrates

- Vegetables and legumes (peas, beans, potatoes) whole grain, fruits, seeds, and nuts.
- Fiber and Starch
- The more complex the better

- Simple Carbohydrates

- Sugar
- Can occur naturally in milk
- Table sugar, high fructose corn syrup, brown sugar, fructose, sucrose, glucose

SIMPLE CARBS VS COMPLEX CARBS

**SIMPLE
CARBS**

VS.

**COMPLEX
CARBS**



FIBER

- Fiber is a complex carb
 - Eat 20-40 grams a day
 - Most Americans only eat about $\frac{1}{2}$ the fiber they need
- How much do we need?
 - Males (14-50 years old) = 38 grams/day
 - Females (9-50) = 25 grams/day
 - On average we would need about 14 grams of fiber per 1000 calories
 - 2,000 calorie diet = 28 grams of fiber
- It is the tough stringy part of the vegetables, fruits, and grains
- Cannot be digested - Important component in proper digestion
 - Helps move waste out of the body
- Fiber rich foods are bulky → They make you feel fuller longer.

NOT ALL FIBER IS CREATED EQUAL

- Insoluble fiber = does not dissolve or absorb in water
 - Keeps you regular
 - Found in whole wheat products, bran, nuts, and many vegetables
- Soluble fiber = soluble in water (dissolves or absorbs)
 - Heart Healthy
 - Found in oats, peas, beans, apples, citrus fruits, and carrots
- WE NEED BOTH

FIBER AND DISEASE PREVENTION

- Helps prevent
 - Obesity
 - Type 2 diabetes
 - Heart disease
 - Constipation
 - Diverticulitis
 - Colon Cancer

HIGH FIBER FRUIT

- Raspberries = 8 grams/serving (1 cup)
- Pear = 5.5 grams/serving (1 pear)
- Blueberries = 4 grams/serving (1 cup)
- Apple with skin = 4 grams/serving (1 medium apple)
- Banana = 3 grams/serving (1 medium banana)

HIGH FIBER VEGETABLES

- Peas cooked - 9 grams/serving (1 cup)
- Broccoli cooked - 5 grams/serving (1 cup)
- Potato baked w/ skin - 4 grams/serving (1 medium potato)
- Corn cooked - 4 gram/serving (1 cup)
- Sweet Potato baked w/ skin - 4 gram/serving (1 medium potato)
- Spinach - 4 gram/serving (1 cup)
- Carrots raw - 4 gram/serving (1 cup)

HIGH FIBER BEANS, NUTS, SEEDS

- Lentils - 8 grams/serving ($\frac{1}{2}$ cup)
- Black beans - 7.5 grams/serving ($\frac{1}{2}$ cup)
- Lima beans - 6.5 grams/serving ($\frac{1}{2}$ cup)
- Kidney beans - 6 grams/serving ($\frac{1}{2}$ cup)
- Almonds - 3.5 grams/serving (23 nuts)
- Sunflower seeds - 3 grams/serving ($\frac{1}{4}$ cup)
- Peanuts - 3 grams/serving ($\frac{1}{4}$ cup)
- Hummus - 2 grams/serving (2 tablespoons)

HIGH FIBER GRAINS

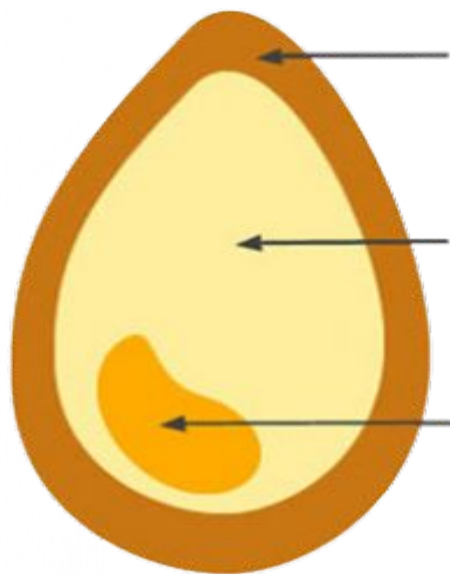
- Raisin Bran Cereal - 7 grams/serving (1 cup)
- Whole wheat spaghetti cooked - 6 grams/serving (1 cup)
- Oatmeal instant - 4 grams/serving (1 cup)
- Whole wheat english muffin - 4 grams/serving (1 muffin)
- Brown rice - 3.5 grams/serving (1 cup)
- Popcorn air popped - 3.5 grams/serving (3 cups)

FIBER AND WHOLE GRAINS

- Choosing whole grains instead of refined grains can add more fiber to your diet.
- Each grain has 3 layers
 - Bran - protects seed, b vitamin
 - Germ - b vitamins, vitamin e, phytonutrients
 - Endosperm - carbohydrate, protein, some b vitamins
- A whole grain food must be made from WHOLE grain
 - MUST HAVE ALL 3 LAYERS

Whole Grain

vs. “White” Grain



Bran

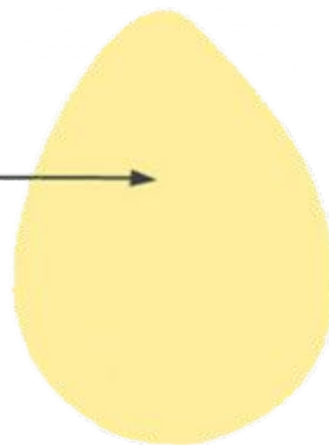
The fiber-rich outer layer that protects the seed and contains B vitamins and trace minerals.

Endosperm

The middle layer that contains carbohydrates along with proteins.

Germ

The small nutrient-rich core that contains antioxidants, including vitamin E, B vitamins and healthy fats.



WHAT IS A REFINED GRAIN?

- Bran and germ have been removed
- Often enriched
 - Only b vitamins and iron are added back
- Often contain **solid fats** and **added** sugars which may cause us to consume excess calories contributing to weight gain

FIBER AND FOOD LABELS

- 3 grams/serving = good source of fiber
- > 5 grams/serving = excellent source of fiber
- Choose foods with **whole grain** ingredient listed **first** on the ingredient list
- Whole grain cannot be listed by the color
 - Ex brown rice = whole grain barley
- The best indicator is the ingredients

HOW CAN YOU GET ENOUGH FIBER (HEALTHY CARBS) IN YOUR DIET?

- Make at least half your diet whole grains
- Fill half of your plate with fruits and vegetables
- Choose plant protein foods like beans, nuts, and seeds more often

CAN YOU EAT TOO MUCH FIBER?

- Increasing fiber too much can increase abdominal cramping, bloating, and gas.
- Increase your intake slowly
 - 5 grams/week
- Drink plenty of fluids
 - 8-10 cups/day

FATS

- **Lipid** - is the scientific name for fat
- Fats provide more than 2x the energy of carbs and proteins
- **Saturated fat** - the carbon chain holds are the hydrogen it can
 - Foods high in **saturated fat**
 - Coconut oil
 - Beef
 - Pork
 - Egg yolks
 - Dairy foods
 - Are solid to semi - solid at room temperature

FATS

- **Polyunsaturated fat** – have 2 or more missing hydrogen atoms on the carbon chain
 - Soybean oil
 - Corn oil
 - Canola oil
 - Olive oil
 - Liquids or oils at room temperature

THE ROLE OF FAT

- Fat is an important source of calories
 - 9 cal/gram
 - Should supply no more than 20-30% of your daily caloric intake
- Fats carry fat soluble vitamins into the blood
 - Vitamins A, D, E, K,
- Fats provide **essential fatty acids** for the body
- Add flavor and satisfy hunger longer because they take longer to digest
- Body fat (adipose tissue) is a form of stored energy from excess calories.
 - Body needs some fat to protect organs and act as insulation

SOURCES OF FAT

- 40% of the fat in your diet are visible fats.
 - Butter, margarine, fat layer on meat and poultry
- Hidden fats
 - Chocolate, seeds, nuts, egg yolks, ice cream, cheese, cream soups, croissants, donuts
- How do we usually prepare fats?
 - Frying and cooking with sauce

CHOLESTEROL

- **Cholesterol** - is a fat like substance, but not considered a nutrient
 - Your liver can make cholesterol if needed
- Your body uses cholesterol to produce certain hormones, vitamin D, the protective sheath around nerve fibers, and make bile acids in the liver for digestion. \
- Dietary cholesterol is only found in animal products
 - Egg yolks, meat, and high fat milk products
- Too much cholesterol can lead to an increase risk of heart disease

SoFAS - SOLID FATS AND ADDED SUGARS

- Get off the SoFAS
- According to the 2010 *Dietary Guidelines for Americans*:
 - SoFAS - Solid Fats and Added Sugars contribute to an average of 35% of daily calories (almost 800 calories/day!!!)
 - Reducing intake of SoFAS is recommended to maintain a healthy diet and decrease caloric intake.

SOLID FATS

- Fats that are solid at room temperature
 - Includes both saturated and trans fats
 - Saturated fats - found in animal products and some plants
 - Trans fats - pre-packaged snacks, baked goods, and fried foods

WHY EAT LESS SOLID FATS?

- Solid fats tend to raise bad cholesterol (LDL) in the blood.
 - Increases the risk for heart disease
 - To lower risk, cut back on foods containing solid fats
- Excess calories can contribute to weight gain and increase risk of chronic health problems.

TOP 10 SOURCES OF SOLID FAT IN THE US

- Grain based desserts
- Pizza
- Regular Cheese
- Sausage, hot dogs, bacon, ribs
- Fried white potatoes
- Dairy desserts
- Tortillas, burritos, tacos
- Chicken and chicken mixed dishes (casseroles)
- Pasta and pasta dishes
- Whole milk

HOW MUCH SOLID FAT SHOULD I HAVE?

- Dietary guidelines suggest less than 10% of calories
 - 200 cals/day from 2,000 calorie diet.
- Keep trans fat consumption as low as possible
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IDENTIFYING SOLID FAT ON FOOD LABELS

- Look for “Saturated fat” and “trans fat” under “Total Fat”
- Look at the ingredient list
 - Beef fat
 - Butter
 - Hydrogenated oil
 - Chicken fat lard
 - Partially hydrogenated oils
 - Shortening

MAKE CHANGES

- Choose lean meats and poultry
- Trim visible fat from meat if possible
- Cook with small amount of vegetable oil or olive oil instead of butter, lard, or margarine
- Try baking, grilling roasting instead of frying
- Peanut butter or almond butter instead of butter
- Eat fewer baked goods
- Look for trans fat on the label

EAT LESS ADDED SUGARS

- Added sugars make you miss out on important nutrients
- Less added sugar helps you maintain a healthy weight
- Prevent cavities
- Reduce risk of type 2 diabetes

TOP 10 SOURCES OF ADDED SUGAR

- Soda, energy drinks, sports drinks
- Grain based desserts
- Fruit drink
- Candy
- Dairy desserts
- Ready to eat cereals
- Sugars and honey
- Tea
- Yeast breads

WHAT DO SOLID FATS AND ADDED SUGARS HAVE IN COMMON?

- SoFAS are energy dense and high in calories.
- SoFas often do not contain many important nutrients like vitamins, minerals, or dietary fiber
- SoFAS provide Americans with many calories and not enough important nutrients.
- The more calories from SoFAS, the more difficult it is to get essential nutrients while staying within our calorie budget.
- For most people, no more than 5-15% of calories from SoFAS can fit into the USDA recommended guidelines.

PROTEIN

- **Protein** - nutrients that help build and maintain all body cells and tissues.
- Contain protein → muscle, bone, connective tissue, teeth, skin, blood, & vital organs
- Made of amino acids - chain of building blocks
- There are 20 amino acids essential amino acids
 - **Essential Amino Acids** - 9 amino acids that your body cannot make, must come from food you eat

ROLES OF PROTEINS

- Used for building & maintaining all body tissues-replace damaged or worn-out body cells
- Amino acids build new body tissues during infancy, childhood, adolescence, and pregnancy
- Body uses proteins to make enzymes, hormones, & antibodies
- Proteins should supply only 10 to 15% of the calories in your diet - 4 calories per gram

SOURCES OF PROTEIN

- **Complete protein sources** (contain all the essential amino acids)-fish, meat, poultry, eggs, milk, cheese, yogurt
- **Incomplete protein** foods (does not contain all essential amino acids)-legumes, seeds, & nuts (plant proteins)
- Can combine incomplete proteins with other incomplete proteins or complete proteins to make complete protein foods
 - legumes & seeds or nuts (peanuts w/ mixed nuts)
 - legumes & grains (beans & rice, peanut butter on bread, tortilla & refried beans)
 - any plant protein & dairy products or eggs (macaroni & cheese & rice pudding)

VITAMINS

- Known as **micronutrients**, because they are needed in small amounts
- Help regulate vital body processes
- Work with enzymes to trigger chemical reactions to allow digestion, absorption, metabolism, & use of other nutrients
- Do not supply calories
- Two types: water-soluble & fat-soluble

WATER SOLUBLE VITAMINS

- **Dissolve in water**→pass easily into the blood during digestion
- Are not stored in the body→excreted in the urine
- Can be lost by heat, steam, or in cooking water→cook vegetables & fruits quickly, steam them or use only small amounts of cooking water, cover food during cooking, use leftover liquid in soups & stews
- Vitamins C (ascorbic acid), B₁(thiamine), B₂(riboflavin), Niacin, B₆, folic acid, B₁₂(cyanocobalamin)

FAT - SOLUBLE VITAMINS

- **Absorbed, stored and transported by fat**
- Store fat-soluble vitamins in fatty tissue, liver, & kidneys
- Buildup of these vitamins can have a dangerous toxic effect
- Vitamins A, D, E & K

MINERALS

- Inorganic substances that the body cannot manufacture, but are needed for forming healthy bones and teeth
- Electrolytes-sodium, chloride, & potassium
 - Present in large amounts and can become electrically charged when in a solution
 - Table salt→sodium & chloride potassium→bananas, oranges, prunes, & meats - also found in water & other liquids
 - Must take in the same amount of water & electrolytes as is released through perspiration, feces, & urine

TYPES OF MINERALS

- Calcium, phosphorus, iron, iodine, manganese, fluorine, sodium, chloride, potassium, magnesium, sulfur

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WATER

- Your body's most essential nutrient-the human body is about 2/3 water
- Water carries nutrients to and transports wastes away from your cells (plasma=92% water) - lubricates joints & mucous membranes - swallow & digest foods, absorb nutrients, eliminate wastes - helps body cool down→perspiration
- Use about 10 cups of water/day→drink about 6 to 8 cups of fluids daily (juices, milk, water)
- Foods also contain water (fruits.,veg., milk=70%, poultry & meat=50-60%, grain prod.=5-35%)

NUTRIENTS - HOW MUCH DO YOU NEED?

- Need the same nutrients no matter what age-amount needed changes
- Teenagers=highest nutrient needs
- Men=more nutrients, because bigger & different body composition
- Pregnant or nursing women=extra calories & nutrients for mother & baby