Chapter 7 Notes

I. Carbohydrates, fats, and proteins
   a. What is nutrition?
      i. Nutrition – the science or study of food and the ways the body uses food
      ii. Nutrients – substances in food that provide energy or help form body tissues and are necessary for life and growth
      iii. Six classes of nutrients
          1. Carbohydrates
          2. Fats
          3. Proteins
          4. Vitamins
          5. Minerals
          6. Water
   iv. Balanced diet – the right amount of nutrients from each class.
   v. Metabolism – the sum of the chemical processes that take place in your body to keep you alive and active
      1. Requires energy from carbohydrates, fats, and proteins
         a. The energy in food is measured in calories
   vi. Carbohydrates – energy-giving nutrients that include sugars, starches, and fiber
   vii. Fats – the main form of energy storage in the body
   viii. Proteins – made of amino acids, which build and repair structures and regulate processes in the body
   b. Carbohydrates
      i. Sugars are the simplest form of carbohydrate
      ii. Starches are more complex carbohydrates that can be broken down into sugars
      iii. Glycogen is a form of carbohydrate your body uses for short-term energy storage
      iv. Fiber is a complex carbohydrate that provides little energy and cannot be digested.
         1. Important to keep you digestive system healthy

   v. Fats – the body’s main form of long-term energy storage
I. Fats

i. Fats are large molecules made up of fatty acids and glycerol

ii. Fatty acids – long chains of carbon atoms attached to hydrogen atoms

iii. Fats are classified by the types of fatty acids they contain.

1. Saturated fats – contain saturated fatty acids
   a. A fatty acid is saturated when every carbon atom is bonded to as many hydrogen atoms as possible
   b. Saturated fats are usually solid at room temperature.
      i. They come from meat and milk
   c. Eating too many saturated fats can lead to obesity, high cholesterol levels, and increased risk of heart disease.

2. Unsaturated fats – contain unsaturated fatty acids
   a. A fatty acid is unsaturated when the carbon atoms are not bonded to as many hydrogen atoms as possible.
   b. Unsaturated fats are usually liquid at room temperature
      i. They come from foods such as oils and fish

3. Cholesterol – another type of lipid found in all human and animal tissues
   a. Your body makes cholesterol.
      i. You get cholesterol from foods such as meat, eggs, and dairy products
   b. Cholesterol is necessary for certain essential functions in the body
   c. Too much of certain types of cholesterol in your diet can cause deposits on blood vessel walls, increasing the risk of heart attack.

   d. Proteins – made of amino acids, which are used in building and repairing structures in the body
      a. Proteins are also needed for hormones, enzymes, and other essential molecules.
      b. Essential amino acids – nine amino acids that the body cannot produce on its own.
      c. Complete proteins – dietary proteins that contain all the essential amino acids.
      d. Incomplete proteins – do not contain all the essential amino acids

II. Vitamins, Minerals & Water

a. Vitamins – carbon-containing nutrients that are needed in small amounts to maintain health and allow growth
   i. Fat-soluble vitamins – dissolve in fat. They can be stored in fat tissue and remain in the body for a long time.
      1. Vitamins, Minerals & Water
ii. **Water-soluble vitamins** – dissolve in water. They are not stored in the body very well.

### Water-Soluble Vitamins

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Foods that have it</th>
<th>What it does</th>
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<tbody>
<tr>
<td>B₆</td>
<td>most vegetables, pork, liver, peas, beans, enriched and whole grains and cereals, nuts, seeds</td>
<td>needed to produce energy from carbohydrates; helps the nervous system to function properly</td>
</tr>
<tr>
<td>B₂</td>
<td>milk; meat; eggs; whole grains; green, leafy vegetables; dried beans; enriched breads and cereals; pasta</td>
<td>needed to produce energy from carbohydrates; important for growth and healthy skin</td>
</tr>
<tr>
<td>B₉</td>
<td>meat, liver, fish, enriched and whole grain breads and cereals, peas and beans, seeds</td>
<td>needed to produce energy from carbohydrates, fat, and protein; needed for the nervous system and healthy skin</td>
</tr>
<tr>
<td>B₁₂</td>
<td>whole grains, meat, liver, broccoli, eggs, nuts, peas, beans</td>
<td>needed to produce energy from carbohydrates, fat, and protein</td>
</tr>
<tr>
<td>B₆</td>
<td>whole grains; liver; meat; fish; bananas; green, leafy vegetables; peas; beans</td>
<td>needed for protein metabolism, the production of hemoglobin in red blood cells, and for the nervous system</td>
</tr>
<tr>
<td>B₁₂</td>
<td>meat, liver, dairy products, eggs</td>
<td>necessary for forming cells (including red blood cells) and for a healthy nervous system</td>
</tr>
<tr>
<td>Folate</td>
<td>green vegetables, liver, whole and fortified grains, peas, beans, orange juice</td>
<td>needed for forming cells (including red blood cells); helps prevent birth defects</td>
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<tr>
<td>Biotin</td>
<td>liver, yogurt, egg yolk, peas, beans, nuts</td>
<td>necessary for metabolism</td>
</tr>
<tr>
<td>C</td>
<td>citrus fruits, melons, strawberries, green vegetables, peppers</td>
<td>promotes healthy gums and teeth, the healing of wounds, and the absorption of iron; acts as an antioxidant to protect cells from damage</td>
</tr>
</tbody>
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b. **Minerals** – chemical elements that are essential in small amounts to maintain good health

i. **Nutrient deficiency** – the state of not having enough of a nutrient to maintain good health
1. Water
   i. About 60% of the body is water
   ii. Water is essential for almost every function that keeps you alive
   iii. You should take in at least 2.5 quarts of water each day.

III. Meeting your nutritional needs

a. **Recommended Dietary Allowances** – the recommended nutrient intakes that will meet the needs of most healthy people
   i. RDAs are guidelines, not exact requirements
b. Understanding food labels
   i. **Serving Size**
   ii. **Calories**
   iii. Daily Values (DVs) – recommended daily amounts of nutrients
      1. The percentage DV tells the amount of the nutrient in a serving relative to the total recommended daily amount for a 2000-calorie diet
   iv. Other terms
      1. Ingredients listed in order of weight
c. The Food Guide Pyramid
   i. Visual and conceptual tool for planning your diet
   ii. Shows the recommended number of servings of six food groups
d. **Dietary Guidelines for Americans** – a set of diet and lifestyle recommendations to improve health in the United States
   i. Divided into 3 parts
      1. Aim for fitness
         a. Aim for a healthy weight
         b. Be physically active each day
2. **Build a Healthy base**
   a. Use the food guide pyramid
   b. Choose a variety of grains
   c. Choose a variety of fruits and vegetables
   d. Keep food safe

3. **Choose Sensibly**
   a. Choose a diet low in saturated fat and cholesterol
   b. Choose food and drink to moderate sugar intake
   c. Choose and prepare foods with less salt
   d. Adults who drink alcohol should do so in moderation

IV. **Choosing a healthful diet**
   a. Steps to a more healthful diet
      i. **Nutrient density** – a measure of the nutrients in a food compared with the energy the food provides
         1. Food with low nutrient density is sometimes called “junk food”
            a. Eating junk food occasionally is OK, but you should always aim for balance and moderation
            b. You can make up for the nutrients missing in junk food by eating healthier foods at other times of the day
            c. Food prepared at home often has less fat and sodium than food from fast-food restaurants
            d. Eating snacks can be healthy if you choose to snack on healthier foods
            e. If you do eat low-nutrient snacks, make sure to balance them out with healthy meals
   b. Nutrition throughout life
      i. Infants who are fed breast milk or formula fed the right mix of nutrients, calories, and other substances necessary for growth and protection from infection
      ii. An infant’s diet is high in fat to provide energy for rapid growth and brain development
      iii. The nutritional needs of children over 2 can be met by following the food guide pyramid, but with smaller serving sizes.
      iv. During the teen years, the body grows and changes rapidly
      v. Adolescent boys should use the high end of the serving ranges on the food guide pyramid. Adolescent girls should use the middle of the ranges.
      vi. Teens should make sure to meet nutrient needs without exceeding energy needs
      vii. Because adults grow less and are less active than teens, they need fewer calories per day. Adults must still make sure their nutrient needs are met.
   c. Special dietary needs
i. Athletes must drink lots of fluids and avoid dehydration
ii. Athletes need a diet high in carbohydrates for extra energy
iii. Most athletes do not need extra protein in their diets
iv. Athletes do not need dietary supplements to improve performance.
   In fact, these supplements can be dangerous
v. If you take a dietary supplement, do not exceed the Tolerable
   Upper Intake Limit for any nutrient
vi. Pregnant women need up to an additional 450 calories per day.
 vii. Pregnant women also need additional protein, B vitamins, folate,
      iron, and zinc.
  viii. If you have a cold, flu, or other mild illness, drink plenty of fluids.
  ix. If you have a chronic or long-term illness, you must make sure
      your diet gives you enough energy and the proper nutrients to fight
      the illness.
d. Choosing a vegetarian diet
   i. A vegetarian diet is one in which few or no animal products are
      eaten.
   ii. Vegans are vegetarians that eat no animal products in any form.
   iii. Most vegetarians get all the proteins they need from the small
        amounts of animal products they eat.
   iv. Vegans must eat from a variety of plant sources to get all the
       essential amino acids and other important nutrients.