HLTH140
Notes
October 9, 2012

Nutrition

Understanding Nutritional Guidelines

- Recommended Dietary Allowance (RDA) – average daily level of intake sufficient to meet the nutrient requirements of nearly all (97-98%) healthy people
- Acceptable Macronutrient Distribution Range (AMDR) – ranges that represent intake levels of essential nutrients that provide adequate nutrition and that are associated with reduced risk of chronic disease
  - AMDR for adults (as a % of calories) are carbs (45-65%), protein (10-35%), and fat (20-35 %)

Types of Nutrients

- Essential nutrients – needed to build, maintain, and repair tissue and regulate body functions
  - Macronutrients: needed in large amounts such as water, carbohydrates, proteins, and fats
  - Micronutrients: needed in small amounts, such as vitamins and minerals

Fuel Potential

- A kcalorie is the amount of energy it takes to raise the temperature of 1 kilogram of water 1 degree centigrade
- 3 macronutrients supply energy
  - Fat = 9 calories per gram
  - Protein = 4 calories per gram
  - Carbohydrates = 4 calories per gram
  - Micronutrients have no calories

Water

- Function:
  - Digests, absorbs, transports nutrients
  - Helps regulate body temperature
  - Carries waste out of the body
  - Lubricates our body parts
- RDA:
  - 1 to 1.5 milliliters per calorie spent (per unit of energy used)
  - 2 to 3 liters, or 8 to 12 cups of fluid
  - Water needs can vary depending on several factors, such as foods consumed and activity level

MACRONUTRIENTS

Carbohydrates

- Function:
  - The body's main source of energy
  - Fuel mos of the body's cells dyring dailt activities

    - Used by muscle cells during high-intensity exercise (good for endurance athletes to consume additional carbs)
    - Only source of energy for brain cells, red-blood cells, and some other types of cells
- Types:
    - Simple carbohydrates (sugars)
    - Complex carbohydrates (starches and dietary fibers)
- RDA:
    - 130 grams for males and females (aged 1-70)
- Simple carbohydrates:
    - Quick energy source
    - Easily digestible and composed of one or two units of sugar
        - Sucrose
        - Fructose
        - Glucose
        - Maltose
        - Lactose
- Complex carbohydrates:
    - Energy source
    - Slower to digest and composed of multiple sugar units
    - Includes starches and dietary fiber
    - Sources of starches
        - Whole grains (whole wheat, rye, brown rice, oats, barley, corn)
        - Vegetables
        - Some fruit

Refined Grains vs. Whole Grains

- Grains can be refined (processed) or unrefined (whole grains)
- Whole grains contain inner later (germ), middle layer (endosperm), outer layer (bran)
- During processing – germ and bran removed leaving starch of endosperm
- Refined grains have same calories, but less fiber, vitamin, minerals
- Whole grains take longer to digest, make people feel full faster and longer
- Consuming whole grains linked to reduced risk of heart disease, stroke, high blood pressure, diabetes, cancers

Fiber

- Plant carbohydrates that cannot be digested
- Types:
    - Dietary fiber – present naturally in grains, legumes, fruits, vegetables, dried beans, nuts, seeds
    - Functional fiber – natural sources or synthesized in a lab, added to food or dietary supplement
    - Total fiber – sum of dietary and functional fiber
- Properties:
    - Soluble – dissolves in water, or broken down by bacteria in large intestines, delays stomach emptying, slows glucose to the blood, reduces cholesterol absorption

    - Insoluble – doesn't dissolve in water, doesn't break down in intestines, provides bulk to feces, prevents constipation, hemorrhoids
- RDA:
    - 25 grams for adult women
    - 38 grams for adult men
    - Typical intake is 14-15 grams/day
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Proteins

- Function:
    - Build and maintain muscles and bones, pparts of blood, hormones, and cell membranes
    - Form enzymes that facilitate chemical reactions
- Amino Acids
    - Composed of 20 different amino acids
        - 9 essential amino acids – body cannot produce, supplied by food
        - 11 non-essential amino acids – body can produce
- RDA:
    - .36 grams/pound of body weight

Protein Sources

- Complete proteins – supply ample amount of all essential amino acids
    - Animal proteins:
        - Meat
        - Fish
        - Poultry
        - Milk
        - Cheese
        - Eggs
- Incomplete proteins – do not supply ample amounts of all essential amino acids
    - Vegetable proteins:
        - Grains
        - Legumes
        - Nuts
        - Seeds
        - Other vegetables

Proteins

- Mutual supplementation – nutritional strategy of combining two incomplete protein sources to provide a complete protein
    - For example: red beans and rice

Fats (Lipids)

- Function:
    - Most concentrated source of energy, and the principle form of stored energy in the body
    - Provide insulation, support and cushion to body organs