PFTA SCHOOLS

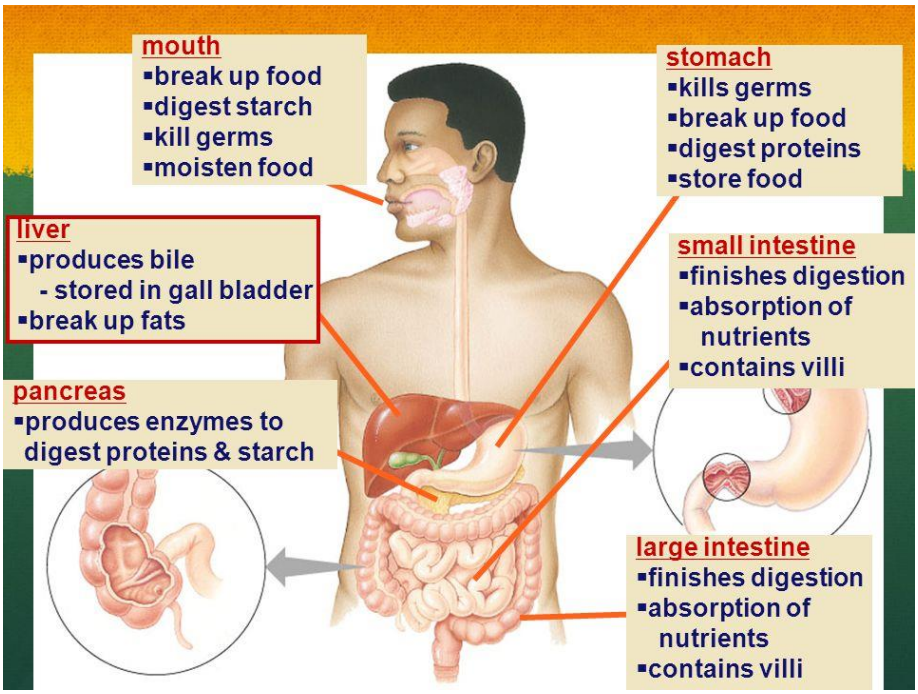
Sports Nutrition Manual

Revised 5/8/2019

Table of Contents

Sports Nutrition

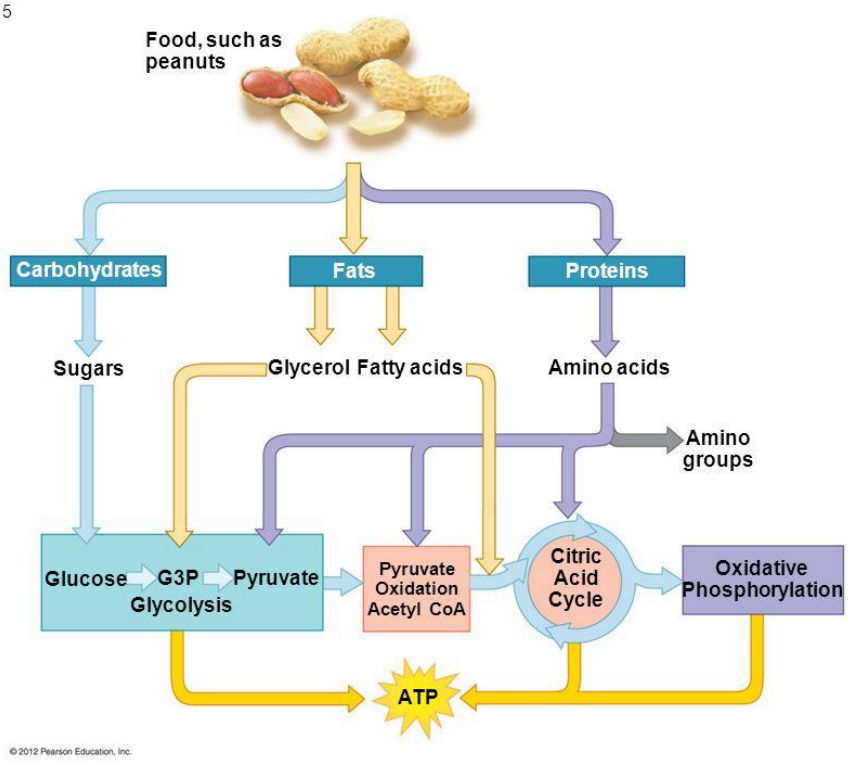
1. What is it?
    a. The study of nutrition to improve sports performance
2. Why do you need it?
    a. Help you and your client reach their goals
    b. Competition
        i. The best trainers are using it
        ii. If you don't use it, clients will find someone who will
3. Nutrients
    a. Energy yielding nutrients provide molecules to form ATP
        i. These nutrients all contain carbon
        ii. ATP is our body's form of instant energy
    b. Food starts breaking down into smaller, usable forms in the stomach
        iii. I.e., protein breaks down into amino acids
        iv. I.e., carbohydrates break down in simple sugar
        v. I.e., large lipid molecules break down into smaller triglycerides
    c. Food absorption
        vi. These molecules began to be absorbed in the small intestine
        vii. Your body sends these larger molecules into various parts of your body and recombines them



    d. Three types of energy yielding nutrients
        viii. Carbohydrates
        ix. Fats
        x. Protein
    e. Three types of non-energy yielding nutrients
        xi. Vitamins
        xii. Minerals
        xiii. Water

4. **Critical thinking: how many calories in one gram of fat, carb, and protein?**
    b. A more accurate measure would be:
        i. Fat 9.45
        ii. CHO 4.30
        iii. Pro 5.65
    c. All macronutrients can be converted into energy (ATP)

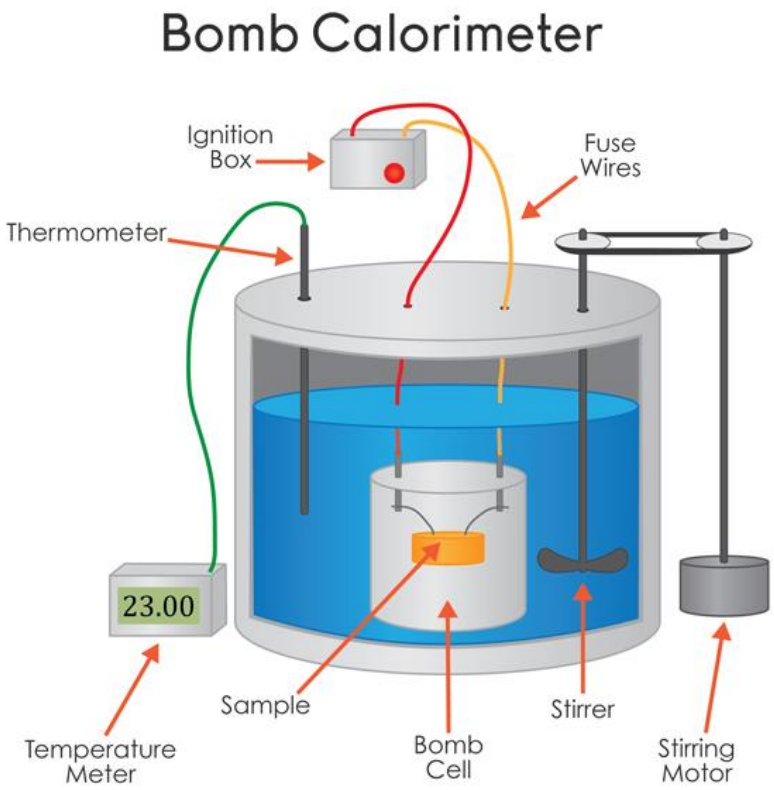
Figure 6.15



5. Energy Needs
    a. Enough nutrients to maintain, repair, and grow tissue without consuming excess energy that may be stored as fat. Based on:
        i. Genetics
        ii. Energy expenditure
        iii. Dietary preferences
6. The Female Athlete Triad
    b. In order of occurrence:
        i. Disordered eating
        ii. Amenorrhea
        iii. Osteoporosis
7. Eating disorders
    c. Anorexia Nervosa
        i. Excessive exercise and excessive dieting
    d. Bulimia Nervosa
        i. Binge and purge

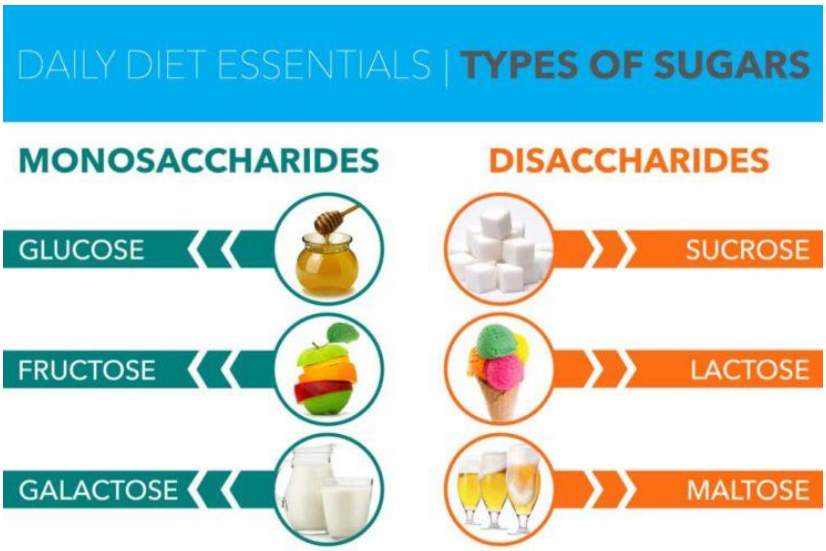
Carbohydrates

1. The word means carbon + water (CH_20)
2. Primary fuel source for intense work
    a. We will cover energy systems in depth in our Master Class
    b. Critical thinking: Are carbohydrates essential in our diets?
3. Widely available
4. Relatively low in cost
5. Can be easily stored (long shelf lives)
6. The healthiest carbs are on the perimeter of the grocery store
7. About 4 calories per gram
8. How do we know how many calories in food? Thanks to the bomb calorimeter



9. Monosaccharides (simple sugars)
    a. Only 1 saccharide
    b. Glucose (blood sugar) $C_6H_{12}O_6$
        i. Primary fuel to the cells
        ii. Circulates in blood
    c. Fructose (fruit sugar)
        i. Mainly in fruits or honey
    d. Galactose
        i. Not usually found in diet
        ii. Product of milk digestion
10. Disaccharides (also simple sugars)
    a. Only two saccharides

b. Sucrose (table sugar)
    i. Glucose + Fructose
    ii. 20-25% of the Western diet
c. Lactose (milk sugar)
    i. Glucose + Galactose
d. Maltose
    i. Glucose + Glucose



11. Oligosaccharides
    a. Usually 3-9 saccharides
12. Polysaccharides
    a. Usually 10 or more saccharides
    b. Glycogen
        i. Carbs stored in animals
        ii. In humans, 80-100 grams in the liver; 300-400 grams in the muscle
    c. Starch
        i. Carbs stored in plants
        ii. Break down more slowly than simple sugars thus supplying energy over a longer period of time
    d. Fiber
        i. Aids with:
            1. Gastrointestinal functioning
            2. Mobilizing harmful chemicals
            3. Slowing the absorption rate of carbs
            4. Dietary recommendations: 20 to 35 grams per day
                a. Americans only consume 12-15 grams which makes us susceptible to disease
        ii. Fiber types
            1. Water soluble
                a. Metabolized by bacteria in large intestine
                b. Less than 2 calories per gram
                c. Slows down transit time
            2. Water insoluble