OVERVIEW – CHAPTER 1

Aerobics (History/Definition)  Metabolic Systems  Cardiovascular System
Wellness (5 components)  Anaerobic (2 systems)  Blood Pressure
Transtheoretical Model (5 stages)  Aerobic (2 systems)  Cholesterol
Exercise/Disease Prevention  Benefits

SUMMARY

Healthy Lifestyle = good nutritional habits + exercise + well-adjusted attitude + ability to relax

AEROBICS
1968 aerobics defined - Dr. Kenneth Cooper
1970s Jazzercise - Judi Sheppard Missett
1980s step aerobics - Gin Miller

- continuous, rhythmic activities that utilize large-muscle groups -- jogging, cross-country skiing, rowing, cycling, swimming and “fast” dancing are some examples of aerobic-based activities

WELLNESS
- taking control of your personal well-being by adopting/maintaining healthy lifestyle habits
  5 components of Wellness
  - physical health  - mental  - social  - spiritual  - emotional

TRANSTHEORETICAL MODEL OF CHANGE (5 Stages)
1. precontemplation (no interest in change)  3. preparation  5. maintenance (maintain new behavior)
2. contemplation  4. action

EXERCISE/DISEASE PREVENTION
Heart (cardiovascular) disease - #1 leading cause of death in U.S.A.
  7 major risk factors
  - physical inactivity  - heredity
  - smoking  - gender
  - high blood cholesterol  - increasing age
  - hypertension (high blood pressure)

Cancer - #2 cause of death in U.S.A.
Strokes - #3 cause of death in U.S.A.

METABOLIC SYSTEMS - “energy system” converts food into energy → adenosine triphosphate (ATP)
- activities are not purely aerobic or anaerobic; an aerobic activity means that the energy for movement is predominantly, but not exclusively, supplied by the aerobic system

Energy Production Spectrum

Aerobic = “with oxygen”
carbohydrates (primary source) and fats utilized as fuel

Anaerobic = “without oxygen”
anaerobic activities are short, intense and powerful
**Glycogen** (stored in muscle & liver)

**Food**

**Glucose**

**Fatty Acids**

** Anaerobic Metabolism **

- **without Oxygen O₂**
  - ATP
  - Lactic Acid (lactate)

** Aerobic Metabolism **

- **with Oxygen O₂**
  - ATP
  - Water & CO₂

**ANAEROBIC METABOLISM – 2 SYSTEMS**

- **Phosphagen System** (1-10 seconds of activity)
  - very high-intensity, short-duration; sprint activities

- **Anaerobic Glycolysis** (1-3 minutes of activity)
  - “Lactic Acid System”
  - high-intensity, short-duration activities
  - lactic acid is a byproduct – build up makes the muscle feel heavy and “burn” → muscle fatigue

**AEROBIC METABOLISM – 2 SYSTEMS**

- **Aerobic Glycolysis** (> 3 minutes of activity)
  - breakdown of glucose
  - lower intensity, longer duration; endurance activities

- **Fatty acid oxidation** (> 20 minutes of activity)
  - breakdown of fat
  - takes more energy to burn fat versus carbohydrates

**CARDIOVASCULAR SYSTEM**

Average healthy resting heart rate (RHR) can vary from 40-100 beats per minute (bpm)

- average RHR for men = 70 bpm & women = 75 bpm

**BLOOD PRESSURE** - 140/90 is considered normal resting blood pressure

**Systolic pressure – contraction phase**

- pressure exerted by the blood in the arteries when the ventricles are contracting

140

**Diastolic pressure – relaxation phase**

- pressure exerted by the blood in the arteries when the ventricles are filling

90

**CHOLESTEROL** (< 200 mg/dl)

- elevated levels may lead to early development of coronary heart disease

- HDL (high-density lipoproteins) = “good cholesterol”
- LDL (low-density lipoproteins) = “bad cholesterol”

**BENEFITS OF EXERCISING THE CARDIOVASCULAR SYSTEM** (partial list)

- ↑cardiac muscle strength
- ↓resting heart rate
- ↑number/size of mitochondria
- ↓total cholesterol
- ↑level of HDL
- ↓blood pressure
- ↑bone density & strength
- ↓stress