Ch 6
Body Composition and Weight Management

Benefits of Healthy Body Composition
- Better health
- Improved performance of physical activities
- Better self-image

Body Composition
- Fat-free mass (Lean Weight)
  - all the body’s nonfat tissues
  - bone, water, muscle, connective tissue, organ tissues, teeth
- Fat
  - essential fat (needed for body function)
    - found in nerves, brain, heart, lungs, liver, mammary glands
    - makes up 3% of total body weight in males
    - makes up 12% of total body weight in females
  - nonessential (storage) fat (excess body fat)
    - found in adipose tissue
    - makes up 12% of total body weight in males
    - makes up 15% of total body weight in females

Typical Body Composition of Male & Female Young Adults

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle</td>
<td>45%</td>
<td>36%</td>
</tr>
<tr>
<td>Essential Fat</td>
<td>3%</td>
<td>Essential Fat</td>
</tr>
<tr>
<td>Non-Essential Fat</td>
<td>~12%</td>
<td>Non-Essential Fat</td>
</tr>
<tr>
<td>Bone</td>
<td>15%</td>
<td>Bone</td>
</tr>
<tr>
<td>Other</td>
<td>~25%</td>
<td>Other</td>
</tr>
</tbody>
</table>

Overweight and Obesity - Basics

- **Overweight**: body weight in relation to one's height and frame size (@66% of population)
- **Overfat**: Actual percentage of body mass made up of adipose tissue. Health may be compromised. Can’t be measured with height/weight charts
- **Obesity**: more serious degree of overweight based on percent body fat ($\geq 25\%$ and $\geq 32\%$ - @ 30.5% of population)
- **Percent body fat**: (proportion of body's total weight that is fat) is a more accurate measurement of body composition than total body weight

Percent Body Fat Classifications

<table>
<thead>
<tr>
<th>Classification</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhealthy range</td>
<td>$\leq 5%$</td>
<td>$\leq 8%$</td>
</tr>
<tr>
<td>Acceptable range (lower end)</td>
<td>6-15%</td>
<td>9-23%</td>
</tr>
<tr>
<td>Acceptable range (higher end)</td>
<td>16-24%</td>
<td>24-31%</td>
</tr>
<tr>
<td>Unhealthy range</td>
<td>$\geq 25%$</td>
<td>$\geq 32%$</td>
</tr>
</tbody>
</table>


Body Composition in the United States

- Sedentary lifestyles are on the increase
- Average caloric intake has increased by 100-300 calories/day in last 10 years
- Potential increase in negative health effects:
  - Hypertension (risk is doubled if obese),
  - Elevated cholesterol levels (risk ratio is higher in obese)
  - Diabetes (obese rate is three times higher than non-obese),
  - Certain types of cancers:
    - $\sigma$ = colon, rectum, prostate;
    - $\varphi$ = gallbladder, uterus, cervix, ovaries

Body Composition in the United States

- Distribution of body fat is also important
- Gaining of weight in abdominal area has higher risk of coronary heart disease, high BP, diabetes, and stroke than gaining weight in hip area.
- Problems can also arise if individuals have too little body fat (eating disorders)
  - $\leq 8\%$ for women and $\leq 5\%$ for men

Diabetes

- Diabetes causes disruption of normal metabolism
- Associated with kidney failure, nerve damage, circulation problems, retinal damage, and blindness
- Currently 7th leading cause of death in US.
- Type I Diabetes – more serious (pancreas produces little or no insulin), usually present before age 30, need medication to control
- Type II Diabetes – Develops slowly (often asymptomatic) – individual is often unaware of problem, may need medication to control
- Gestational Diabetes – usually disappears after pregnancy, but can lead to Type II diabetes

Diabetes

- Major factors in development of Diabetes
- Age; Obesity; Physical Inactivity; Family History; Lifestyle
- Warning Signs:
  - Frequent urination; extreme hunger or thirst; unexplained weight loss; extreme fatigue; blurred vision; frequent infections (bladder, gums, skin, vagina); cuts/bruises that are slow to heal; tingling/numbness in hands/feet; generalized itching (no rash)
- Prevention:
  - Moderate diet to control body fat and regular exercise
Assessing Body Composition

- **Body Mass Index (BMI)**
  - Not a measure of body composition
  - One's weight should be proportional to height
  - Body composition or fat distribution are not considered!
  - Calculated by dividing weight (kg) by height (meters)² or by dividing weight (lbs) by height (inches)² x 705
  
  \[ \text{BMI} = \frac{\text{weight (lbs)}}{\text{height (inches)}^2 \times 705} \]

- If your BMI is less than 18.5, it falls within the "underweight" range.
- If your BMI is 18.5 to 24.9, it falls within the "normal" or Healthy Weight range.
- If your BMI is 25.0 to 29.9, it falls within the "overweight" range.
- If your BMI is 30.0 or higher, it falls within the "obese" range.

- **Percent body fat**
  - Calculated using skinfold measurements (± 3% error)
  - Men: Chest, Abdomen, Thigh; Women: Triceps, Suprailium, Thigh

- **Other methods**
  - Hydrostatic (underwater) weighing (± 2.5% error – H₂O displacement)
  - Bioelectrical impedance analysis (BIA) (± 10% error – tends to overestimate body fat in very lean individuals and underestimate body fat in obese)
  - Air Displacement Plethysmography – Air displacement (Bod Pod) (± 2.2% error – better accuracy needed for different populations (age groups, ethnic groups, and athletic groups)
  - Dual Energy X-Ray Absorptiometry (DEXA) – uses x-ray energy to assess body composition (± 1.8% error)

Measuring Body Fat Distribution

1) *Waist circumference measurement*
   - Problem if: ♂ > 40 in; ♀ > 35 in.

2) Waist-to-hip circumference ratio
   - Definition: waist circumference measurement divided by the measurement of the widest circumference around the hips.

3) Results that exceed norms are associated with significant health risks (e.g. Type 2 diabetes, hypertension, cardiovascular disease)

Girth Measurements

**Lab 6.1**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Gender</th>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-26</td>
<td>Male</td>
<td>Right Upper Arm</td>
<td>Abdomen</td>
<td>Right Forearm</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>Abdomen</td>
<td>Right Thigh</td>
<td>Right Forearm</td>
</tr>
<tr>
<td>27-50</td>
<td>Male</td>
<td>Hips</td>
<td>Abdomen</td>
<td>Right Forearm</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>Abdomen</td>
<td>Tight Thigh</td>
<td>Right calf</td>
</tr>
</tbody>
</table>

Girth Measurements Site: [http://www.brianmac.co.uk/tagrith.htm](http://www.brianmac.co.uk/tagrith.htm)

**Lab 6.2**

- Attain accurate measure of your height & weight
- Enter information on the following site:
- Record BMI score: _________
- Copy information from “RESULTS”
- Use chart on p. 133 of text (Table 6.4) to record health category

BMI Calculation Site:

**Lab 6.3**

**Waist-to-Hip Ratio**

- Waist Circumference: _________
- Hip Circumference: _________
- Waist-to-Hip Ratio: _________

Use Table 6.5 (p. 134) for Disease Risk: _________
**Recommended Body Weight**

Lab 6.4 Recommended Body Weight

Body Weight in lbs: ______

Current % body fat estimate: ______

(Body wt) x (% body fat): ______ = Fat Weight

(Body weight) - (Fat Weight): ______ = Lean Weight

Choose desired fat percent from Table 6.3 (p. 128 of text)

Recommended Body Weight: ______

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**Calculating Daily Caloric Needs**

Lab 6.5

Women:

- Body Weight in lbs
- Height in Inches
- Age in Years
- Basal Metabolic Rate (BMR)
- Activity Level % (from Lab 6.5 in text)
- Calories from Activity

Daily Calorie Need to Maintain Weight: ______

Men:

- Body Weight in lbs
- Height in Inches
- Age in Years
- Basal Metabolic Rate (BMR)
- Activity Level % (from Lab 6.5 in text)
- Calories from Activity

Daily Calorie Need to Maintain Weight: ______

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**Achieving Healthy Body Weight and Composition**

- Set an overall goal and realistic intermediate goals
- Calculate a target body weight or percent body fat
- Increase level of activity
- Follow a healthy diet
- Track progress

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**Body Composition Considerations**

- Body weight measurements do not reveal actual changes in body fat or muscle levels.
- Muscle weighs more than fat and burns more calories at rest.
- Exercise can increase muscle and decrease body fat.
- Dieting can decrease precious muscle in our bodies.

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**Effects of a 6-week Aerobics Exercise Program on Body Composition**

![Graph showing weight loss, fat loss, and lean tissue gain](image)

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**Body Composition Questions**

- What about spot reducing?
- Need to reduce overall amounts of fat by burning more calories than you take in.
- What is cellulite?
- Cellulite is fat deposited under the skin
- Best removed with diet & exercise program
- Liposuction?
- Surgical removal of fat in specific areas.
- Can be risky solution to problem.
Weight Management Basics

- Controlling body weight is controlling body fat
- More important to consider one’s body composition rather than “weight”
- @66% of American adults are overweight (weighing 10% or more over recommended weight or Body Mass Index (BMI) ≥ 25)
- 14 year study showed greater risk of heart disease & cancer if overweight

Weight Management Basics - continued

- Slow weight gain over time can also lead to problems
- @30% of American adults are obese (weighing 20% or more over recommended weight or having a BMI ≥ 30)
- One of the most serious and widespread challenges to health and wellness in the United States

Health Risks of Obesity

- Major risk factor for heart disease
- Increased risk of CVD, hypertension, gallbladder disease, diabetes
- Associated with certain types of cancer
- Complications in pregnancy
- Respiratory problems
- Joint disease

Factors Influencing Obesity

Genetic:
- genes influence body size and shape, body fat distribution, and metabolic rate; can account for 75%-80% of percent body fat in children

Environmental:
- lifestyle choices; European vs. USA studies

Metabolism and Energy Balance:
- energy in (as food) versus energy out (resting metabolism, energy to digest food, physical activity)

Metabolism and Energy Balance

- Metabolism: the sum of all the vital processes by which food energy & nutrients are made available to and used by the body
- Resting Metabolic Rate (RMB): the energy required to maintain vital body functions while the body is at rest (e.g. respiration, heart rate, body temperature, blood pressure)
- High RMB means you burn more calories at rest and can take in more calories

Resting Metabolic Rate (RMR)

- RMR accounts for 55-75% of daily energy expenditure; 5-15% required for digestion; 10-40% energy expended in physical activity
- Factors affecting RMR
  - Heredity – inherited from parents
  - Gender – males tend to have higher RMR – more muscle
  - Lifestyle – an ongoing commitment
- Exercise increases RMR
Explanations for Overweight

- To maintain current weight: Calories in = Calories out
- We control the food taken in and the energy expended
- Weight cycling (yo-yo dieting): Even small losses in weight (if maintained) can be helpful
- Set-Point Theory – an internal control mechanism to regulate body weight – What weight is right for an individual? Exercise can “reset” this set-point
- Best to combine caloric expenditure with reduction in caloric intake

Explanations for Overweight

- Fat-Cell Theory – obese have more and larger fat cells.
- Weight gain due to fat cell hypertrophy (cells become filled with lipids & enlarge) – Weight loss calls for a reduction in size of fat cells not the number
- Restrained eating (restricting food intake) leads to overeating (binge eating - leads to guilt, shame, etc.) – other causes: emotions, situations, physical states
- Psychological factors – Eating becomes a distraction from difficult feelings, used to combat low moods, low self-esteem
- Socio-economic factors – obesity goes down as income goes up
- Cultural factors – food equates with “love” & caring – part of social gatherings

Hidden Calories

- “Reduced” fat foods – fat often replaced with sugar – Need to check the labels
- Regular sodas – a 12 oz. soda may have 150-200 calories – plain H₂O is better
- Alcoholic beverages – wine has about 100 calories; beer or cocktail has about 150 calories; wine coolers about 175 calories – Substitute “light” or non-alcoholic versions
- Fruit juices/drinks – can be high in sugar – more than the “plain” fruit
- Muffins – Large, high in fat, 300-500 calories – better to choose whole grain breads, bagels, English muffins
- Condiments – Most have about 100 calories/teaspoon – use herbs, spices, lemon juice

Changing Your Energy Balance

- For weight loss, a negative calorie balance must be created by expending more calories than are consumed
- Increasing physical activity increases calories expended
- Changing diet can decrease calories consumed

Dietary Guidelines for Weight Management

- Control consumption of calories (average intake increased 100-300 calories/day over past 10 years), fat (no more than 66 grams in 2000 cal. diet), sugar/refined carbs. (may trigger overeating), protein (excess will be stored as fat)
- Monitor portion sizes (smaller than you want; follow food pyramid examples)
- Increase intake of complex carbohydrates – pasta/potatoes (avoid high-fat toppings/sauces)
- Develop regular eating habits
Portion Sizes

- 1 cup = woman’s fist or tennis ball
- 1 ounce = 1 thumb or 4 stacked dice
- 1 ounce snack food = 1 handful nuts or candies
- 1 ounce snack food = 2 handfuls of chips/pretzels
- 3 ounces = palm of hand; deck of cards; audio cassette tape
- 1 teaspoon = 1 thumb tip
- 1 tablespoon = 3 thumb tips or ½ ping-pong ball
- ½ cup rice = ice cream scoop or 1/3 soda can
- 1 medium potato = computer mouse

A Healthy Lifestyle for Weight Management

- Diet and eating habits:
  - Eat a moderate number of calories & watch portion sizes carefully
  - Limit intake of dietary fats and added sugars
  - Increase your intake of complex carbohydrates
  - Limit protein intake to recommended levels
  - Eat small, frequent meals (3-4 + healthy snacks); don’t skip meals – leads to problems
  - Maintain a structured pattern of eating

- Physical Activity and Exercise:
  - Engage in moderate CRE exercise (70% THR) of medium to long duration (90-150 minutes/week) as part of your exercise program
  - Include weight training as part of your exercise program

- Thoughts and emotions:
  - Develop realistic goals for yourself and your behavior
  - Think positively about yourself, and praise yourself for your accomplishments
  - Positive self-talk

- Coping strategies:
  - Develop healthy ways of dealing with stress, boredom, fatigue, and loneliness that don’t involve food
  - Deal positively with the stresses and challenges of life

- Strategies for Weight Management
  - Doing it alone – can be successful; 64% successful w/o joining a group; limit loss to ½-2 lbs/week; early wt. loss is H₂O – later loss is fat
  - Diet books:
    * High protein, low carb diets (Sugar Busters, The Zone, Dr. Atkins’ New Diet Revolution) put body at risk for heart disease, colon cancer; wt loss is due to loss of H₂O & protein; reason they work is low number of calories taken in
Strategies for Weight Management

* Low fat, high-carbohydrate diets are hard to follow (New Hilton Head Metabolism Diet & Pritikin Weight Loss Breakthrough)
* “Magic” & fad diets can be dangerous (The Cabbage Soup Diet; Diet based on blood type)

How to spot a “Fad” diet

- It promises super-fast results
  A realistic and safe expectation is to lose about one pound per week
- It limits food choices
  Limiting or banning certain types of foods is potentially nutritionally deficient and not sustainable; best to have variety in foods with healthy portions
- It requires specific meal/food combinations
  No scientific evidence that combining foods help you drop weight or “wrong” combinations will turn food to fat or increase toxin levels
- It included special pills, powders, or herbs
  Some special ingredients are: laxatives or diuretics; others effect metabolism in a potentially harmful way
- It skips exercise
  Exercise is necessary to lose weight and keep it off

From: USA Weekend - Health Smart The Doctors, Initials. (2011, July 31). 5 ways to spot a bogus diet. USA Weekend, 8.

Diet aids – Seeking a quick solution to a long term situation can lead to problems
- Diet pills with phenylpropanolamine hydrochloride (PPA) can cause CV side effects, dizziness, headaches, rapid pulse, heart palpitations
- Ephedrine (ephedra) - appetite suppressant & stimulant to heart & nervous system - serious problems - elevated BP & HR
- Commercial programs: only 10-15% success rate in keeping weight off; check into the costs (foods/supplements) & risks of the program

Prescription drugs: some caused heart valve problems (fen-phen); only for serious weight problems; need lifestyle changes
- Surgery: May be necessary for those 100% or more overweight; can have serious side effects
- Psychotherapy: if eating disorder is diagnosed; may need the help of a therapist
- May need professional help if 20% - 40% overweight

Anorexia Nervosa: effects 1-3 million; 95% female ages 12-18; characterized by intense fear of gaining weight or becoming fat; self-esteem is tied to their evaluation of their body/shape
Bulimia Nervosa: (binge & purge); becoming a problem for young (11-12) & old (40-60); places serious stress on body
binge-eating disorder: uncontrolled eating leads to feeling of shame, guilt, depression; feel rigid dieting is only solution, but can’t/don’t follow through

Body Image

- Picture of the body as seen through the mind’s eye
- Negative body image can cause significant psychological distress
- Eating disorders characterized by dissatisfaction with body image and body weight (8 million suffer)
To Safely Gain Weight

- Program should be gradual and include strength training exercise & high carb/high calorie diet changes
- Limit fats and include complex carbohydrates (60-65% daily calories from carbs)
- Usually enough protein in “regular” diet
- Don’t skip meals; add 2-3 snacks to diet
- Could use sport drink with 60% of calories from carbohydrates; but don’t substitute for meals

Guidelines for Healthy Weight Management

- Assess motivation and commitment
- Set reasonable goals
- Assess current energy balance
- Increase level of physical activity
- Make changes in diet and eating habits
- Put plan into action (keep a log of what eaten & exercise)
- Think positively

Ch 7
Stress Management

General Adaptation Syndrome

- Fight or Flight
  - Three predictable stages:
    - **Alarm** – body is more susceptible to disease or injury – geared to deal with crisis -
      brain, heart & skeletal muscles receive more glycogen and O₂ due to increased adrenaline;
      less important organs for defense receive less
    - **Resistance** – allows person to deal with added stress – the continuation of the “stressor” – cannot go on for long – body will seek “homeostasis”
    - **Exhaustion** – If previous two stages are persistent – it can lead to illness or life threatening exhaustion (mental distortions or disorganized thinking)

Stress Basics

- **Stressors** are any physical or psychological event or condition that produces stress
- Situations may trigger physical & emotional reactions
- **Stress response** is the physiological and emotional response to stressors
- Nervous and endocrine systems produce physical reactions to stressors

General Adaptation Syndrome

- General Adaptation Syndrome (GAS) - Described by Has Selye as “a universal and predictable response pattern to stressors”
- Two categories of stress:
  1. **eustress**: stress triggered by pleasant stressor
  2. **distress**: stress triggered by unpleasant stressor
Allostatic Load

- Allostatic Load – the long-term wear and tear of the stress response
- Depends on one’s genetics, life experiences, emotional, and behavioral responses to stress
- Can be due to frequent stressors, poor adaptation to common stressors, inability to shut down stress response
- High Allostatic Load is linked to heart disease, high BP, obesity, reduced immune system functioning
- If your Allostatic Load exceeds your ability to cope, you are more likely to get sick.

Physical Responses to Stress

- Autonomic nervous system (digestion, heart rate, breathing, blood pressure, etc.)
  - parasympathetic (relaxed state – digesting food, storing energy, promoting growth)
  - sympathetic (fight-or-flight reaction – in emergencies)
- Endocrine system
  - releases hormones: cortisol (hydrocortisone), epinephrine (adrenaline), norepinephrine (noradrenaline)

FIGHT or FLIGHT Reactions

- Hearing & vision become more acute
- Heart accelerates to pump more oxygen
- Liver releases extra sugar for energy to muscles & brain
- Perspiration increases to cool skin
- Endorphins released to relieve pain in case of injury

When stress is ended the parasympathetic division returns body to homeostasis – vital functions return to normal

- Soreness can result the day after
- In today’s society – many stressors (all not appropriate – traffic, test anxiety) can effect the “fight or flight” reaction

Physical responses may be the same, but emotional responses will vary

Emotional Responses to Stress

- Anxiety, depression, fear
- Controlled by the somatic nervous system
- Effective responses include: talking, laughing, exercising, meditating – promotes wellness
- Ineffective responses include: using tobacco, alcohol, drugs, overeating – can be detrimental
- Influenced by our personality (type-A react explosively vs. “hardy” personality react mildly)
- Past experiences (giving a speech),
- Gender (♀ vs. ♂) & cultural background also have an impact

Signs of Stress

**Physiological**
- Headaches/muscle aches
- Neck/back pain
- Increased heart rate
- Chest pains
- Upset stomach
- Dry mouth
- Loss of appetite
- Insomnia

**Psychological**
- Lack of concentration
- Irritability
- Restlessness
- Depressed mood
- Impulsiveness
- Difficulty in remembering things
Signs of Stress

Behavioral Changes associated with stress

- Emotional outbursts
- Frequent crying
- Angry outbursts
- Isolation/withdrawal
- Sexual dysfunction
- Communication difficulties
- Use of escape substances (alcohol/drugs)

Stress and Disease/Illness

- Psychoneuroimmunology (PNI) – study of the interactions among the nervous system, the endocrine, system, and the immune system.
- Stress impairs the immune system and can affect one’s health (colds, asthma attacks)
- Can lead to digestive problems, tension headaches, insomnia, reproductive complications
- Cardiovascular disease – elevated blood pressure and be a result of a stressor due to constricted blood vessels & elevated heart rate – leads to stroke, heart attacks, and death

Personality and Stress

- HARDINESS – personality trait that can mediate the effects of stress
- Characteristics:
  1. **Commitment**: sense of dedication to one’s life goals; keeping focus on major goals
  2. **Challenge**: a positive/welcomed view of new events/demands – new opportunities
  3. **Control**: individual has an influence over their life's events – being proactive vs. reactive
   - Try to maintain “social connectedness” to lessen stress

Personality Types

- **Type A** – aggressiveness, anger, impatience, time urgency, highly competitive, irritability, controlling, hostility, and deep seated insecurity – predisposed to heart disease and a possible second heart attack (but may better survive a first heart attack)
- **Type B** – contemplative nature, more relaxed, less competitive, less aggressive, less worried about time

Common Sources of Stress

- Major life changes (divorce, early adulthood – new relationships/breakups)
- Daily hassles (Atlanta traffic)
- College stressors (retain a scholarship)
- Job-related stressors (boss, salary, job performance, burnout)
- Interpersonal and social interactions (family & friends)

College Stress

- **Environmental stressors**: living conditions, traffic, weather, location of housing, noise levels
- **Physiological stressors**: sedentary lifestyle, poor nutrition, lack of sleep, physical illness or injury
- **Social stressors**: difficult relationships (friends, family roommates), work issues, financial problems, academic issues
- **Psychological stressors**: feelings of inferiority, rejection, negative thinking, “catastrophizing”
Tools for Managing Stress

- Acknowledging & changing the stress causing situation
- Social support (sharing of feelings)
- Clear communication (express yourself)
- Regular exercise in moderation (better adaptation to stress)
- Good nutrition (avoid caffeine & “stress formula” vitamins – they don’t work to reduce stress)
- May need outside support/help
- Learn to manage your time

Time-management Strategies

- Time-management skills (avoid overcommitment, procrastination, & boredom)
- Set priorities and realistic goals
- Budget enough time
- Create short-term goals
- Visualize achievement
- Do least-favorite task first
- Consolidate tasks and delegate responsibility
- Learn to say “No!”
- Give yourself a break
- Just do it!!

Cognitive Strategies for Stress Management

- Modify expectations (avoid unrealistic expectations)
- Monitor self-talk (minimize/avoid hostile, critical, self-deprecat ing thoughts)
- Live in the present (don’t worry about the past or what’s not under your control)
- Be flexible (go with the flow – can’t do everything for everyone)
- Laugh! (humor can be therapeutic – triggers endorphins)

Relaxation Techniques

- Trigger the relaxation response through:
  - Progressive relaxation (tense & relax muscles – tells body to reduce the stress response)
  - Visualization (imagery – used in sports to enhance performance)
  - Deep breathing (deep, slow breathing promotes relaxation)
  - Music – newborns & stroke victims have benefited from music

- Meditation – quieting or emptying the mind
- Hatha Yoga – promotes the “union” of mind, body, and soul
- Tai Chi – good health results from a balanced “chi” – the energy force that surrounds and permeates all things
- Biofeedback – becoming more aware of one’s level of physiological arousal
- Hypnosis/self-hypnosis – mental focusing intensifies – helps one to feel something other than stress
- Massage – subdues the stress response