Disordered Eating
HNF 610: Nutrition & Fitness
Dr. Melissa Olfert
Eating Disorders vs. Disordered Eating

- Disordered eating represents a temporary or mild change in eating behavior.
  - Rarely persist and do not require professional intervention
- Eating disorders represent illnesses that seriously interfere with one’s daily activities.
  - Anorexia nervosa, bulimia nervosa, and binge-eating disorder
<table>
<thead>
<tr>
<th>Factor</th>
<th>Anorexia Nervosa</th>
<th>Bulimia Nervosa</th>
<th>Binge-Eating Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Weight</td>
<td>Below normal (&lt;85% of recommended weight)</td>
<td>Usually normal</td>
<td>Above normal</td>
</tr>
<tr>
<td>Binge eating</td>
<td>Possible</td>
<td>Yes, at least twice for 3 months</td>
<td>Yes, at least twice for 6 months</td>
</tr>
<tr>
<td>Purging</td>
<td>Possible</td>
<td>Yes, at least twice for 3 months</td>
<td>No</td>
</tr>
<tr>
<td>Restrict food intake</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Body image</td>
<td>Dissatisfaction with body and distorted image of body size</td>
<td>Dissatisfaction with body and distorted image of body size</td>
<td>Dissatisfaction with body</td>
</tr>
<tr>
<td>Fear of being fat</td>
<td>Yes</td>
<td>Yes</td>
<td>Not excessive</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Menstrual abnormalities</td>
<td>Absence of at least 3 consecutive periods</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Copyright © 2009 Wolters Kluwer Health | Lippincott Williams & Wilkins
History

- Richard Morton (1637–1698)
  - Receives credit for the first medical description in 1689 of a wasting (anorectic) disease often associated with tuberculosis

- Ernest Charles Lasègue
  - A student friend of renowned French physiologist Claude Bernard
  - Wrote of women’s refusal of food “that may be indefinitely prolonged”
History (cont.)

- Sir William Gull
  - Physician to Queen Victoria of England
  - Studied women who refused food
  - Credited as the first person to “officially” use the term anorexia nervosa instead of anorexia-hysteria coined by Lasègue
  - Lasègue’s book chronicled the stages of this disease in young French girls.
The first published photo of a person suffering from anorexia nervosa appeared in a 1932 issue of the *New England Journal of Medicine*.

It was not until the early 1970s that the American media began to write about eating disorders.

In 1983, the popular folksinger Karen Carpenter died of anorexia nervosa, bringing intense media scrutiny about the history and seriousness of eating disorders in general and anorexia nervosa in particular.
Prevalence and Incidence of Eating Disorders

- Over a lifetime, an estimated 0.5–3.7% of females suffer from anorexia nervosa and 1.1–4.2% suffer from bulimia nervosa.
- Community surveys estimate that between 2% and 5% of Americans experience binge-eating disorder in any 6-month period.
- The mortality rate among people with anorexia nervosa averages 0.6% a year, or approximately 5.6% per decade.
Prevalence and Incidence of Eating Disorders (cont.)

- Disordered eating behaviors generally affect females between the ages of 15 and 35.
- Prevalence in the general population ranges from 1–5% of female high school and college students to as high as 12–15% of females in medical and graduate schools.
- Increasing number of men are affected.
- Men currently represent 6–10% of individuals with eating disorders, with the greatest prevalence among models, dancers, men abused during childhood, and gays.
Focus on Body Weight

- Among 3000 middle-school children studied for body image and dietary practices, it was found that:
  - 55% of eighth-grade girls believed they were fat
  - 50% of eighth-grade girls had dieted
  - For the boys, 28% considered themselves fat
  - 5% had dieted
  - Only 13% of the girls and 13% of the boys were actually fat
Models and BMI

- Today, a model’s body weight averages 23 pounds below the national average for women.
- BMI of most fashion models is lower than that of all but 2% of American women.
- The Council of Fashion Designers of America (CFDA) recently recommended that model agencies:
  - Do not hire women under age 16
  - Supply their models with healthy snacks backstage at shoots
  - Provide models with nutrition and fitness education
Female Athletes at Greater Risk

- Clinical observations indicate a prevalence between 15 and 70% for eating disorders among athletes.
- Eating disorders and unrealistic weight goals occur most frequently among female athletes in the aesthetic sports such as:
  - Ballet
  - Body building
  - Diving
  - Figure skating
  - Cheerleading
  - Gymnastics
Athletes and Coaches

- Coaches often compound the problem:
  - 67% of female collegiate gymnasts reported that their coaches said they weighed too much.
  - 75% of these athletes used weight-loss strategies involving vomiting or laxative or diuretic use.
  - Weight reduction attempts averaged 85% in female and 93% in male weight-class athletes.
Risk Factors for Disordered Eating Among Athletes

- Include:
  - Pressure to optimize performance and/or modify appearance
  - Psychological factors, such as low self-esteem, poor coping skills, perceived loss of control, perfectionism, obsessive-compulsive traits, depression, anxiety, and history of sexual/physical abuse
  - Underlying chronic diseases related to caloric use
Anorexia Athletica

- Describes a continuum of subclinical eating behaviors of physically active individuals
- Fail to meet the criteria for a true eating disorder
- Exhibit at least one unhealthy weight-control method or disordered eating pattern
  - Vomiting
  - Diet pills
  - Laxatives
  - Diuretics
Muscle Dysmorphia

- Also known as the Adonis Complex
- Pathologic preoccupation with muscle size and overall muscularity
- These individuals view themselves as small and frail, when in reality, many are large and muscular.
- They often endanger their health by excessive exercising, bingeing-and-purging rituals, steroid abuse, and inordinate reliance on nutritional and dietary supplements to alter their appearance.
Characteristics of Muscle Dysmorphia Among Body Builders

- Respond that they are totally or mostly dissatisfied with their body
- Have higher rates of current or past major mood, anxiety, or eating disorders
- Spend more than 3 hours daily thinking about their muscularity
- Avoid activities and people because of their perceived body defect
- Report little or no control over compulsive weightlifting and dietary patterns
- Relinquish activities that were formerly enjoyable
The Exercise Addict

- Someone who does whatever it takes to make additional time to exercise
- A rigid daily schedule of working out often takes place at the expense of family, career, and interpersonal relationships
- Sense of worth becomes inextricably tied to the volume of exercise accomplished
- Disruption of the daily exercise routine often triggers withdrawal symptoms such as anxiety, restlessness, and mood swings, traits that diminish only when exercise resumes
Anorexia Nervosa

- Characterized by:
  - Distortions of body image
  - A crippling obsession with body size
  - Preoccupation with dieting and thinness
  - Refusal to eat enough food to maintain a minimally normal body weight
- Body weight decreases below normal for age and stature
Anorexia Nervosa (cont.)

- Persons with anorexia actually perceive themselves as fat despite their emaciation.
- Compulsive exercise behaviors go hand-in-hand with anorexia nervosa.
- Rather than starve or vomit, the anorectic fanatically expends as many calories as possible through physical activity.
- If untreated, between 6 and 21% of anorectics die prematurely from suicide, heart disease, or infections.
Neuroendocrine
- Loss of monthly menstrual period (amenorrhea)
- Cold intolerance (hands and feet)
- Lowered core temperature related to abnormal temperature regulation and low body fat
- Lowered BMR
- Loss of sexual desire
- Low estrogen levels leading to brittle bones (from mineral depletion) and stress fractures
- Decline in neurotransmitters serotonin and epinephrine
- Euthyroid sick syndrome: low to normal T-4, low to normal T-3, elevated reverse T-3

Cardiovascular
- Hypotension
- Decreased resting heart rate (bradycardia)
- Cardiac arrhythmias
- Diminished cardiac mass, particularly left ventricle
- Anemia related to inadequate nutrition

Digestive
- Constipation
- Dental problems
- Decreased gastric emptying
- Abdominal pain and distension related to GI tract disuse atrophy

Skin and hair
- Lanugo (soft, downy hair growth over the body that traps air and increases insulation)
- Dry, scaly, and itchy skin
- Thinning, dull, and brittle hair due to malnutrition
- Nails become dry and brittle
- Yellowing of skin

Fluid
- State of dehydration
<table>
<thead>
<tr>
<th>General</th>
<th>Mouth</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Appetite loss</td>
<td>• Sores</td>
</tr>
<tr>
<td>• Fatigue</td>
<td>• Cracking around lips</td>
</tr>
<tr>
<td>• Inability to exercise (due to fatigue and</td>
<td>• Tooth decay</td>
</tr>
<tr>
<td>weakness)</td>
<td>• Gum disease</td>
</tr>
<tr>
<td>• Impaired memory</td>
<td>• Parotid gland enlargement</td>
</tr>
<tr>
<td>• Anxiety</td>
<td>• Adenopathy</td>
</tr>
<tr>
<td>• Depression</td>
<td>• Bad breath</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin</td>
<td>Circulatory</td>
</tr>
<tr>
<td>• Dry</td>
<td>• Cool</td>
</tr>
<tr>
<td>• Cool</td>
<td>• Blue feet and hands</td>
</tr>
<tr>
<td>• Mottled/blue</td>
<td>• Low blood pressure</td>
</tr>
<tr>
<td>• Bruises</td>
<td>• Dizziness</td>
</tr>
<tr>
<td>• Self-inflicted cuts</td>
<td>• Fainting</td>
</tr>
<tr>
<td>• Scalp hair loss</td>
<td>• Dehydration</td>
</tr>
<tr>
<td>• Lanugo (baby) hair</td>
<td>• Shortness of breath</td>
</tr>
<tr>
<td></td>
<td>• Swelling</td>
</tr>
<tr>
<td>Abdominal</td>
<td>Reproduction</td>
</tr>
<tr>
<td>• Heartburn</td>
<td>• Infertility</td>
</tr>
<tr>
<td>• Nausea</td>
<td>• Oligomenorrhea</td>
</tr>
<tr>
<td>• Pain</td>
<td>• Amenorrhea</td>
</tr>
<tr>
<td>• Cramping</td>
<td>• Decreased libido</td>
</tr>
<tr>
<td>• Constipation</td>
<td></td>
</tr>
<tr>
<td>• Early satiety</td>
<td>Urinary</td>
</tr>
<tr>
<td>• Vomiting, bloating</td>
<td>• Frequency, especially at night</td>
</tr>
<tr>
<td></td>
<td>• Diminished urine output</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td></td>
</tr>
<tr>
<td>• Aching joints/muscles</td>
<td></td>
</tr>
<tr>
<td>• Fractures of spine, hip, wrist</td>
<td></td>
</tr>
</tbody>
</table>
**Neuroendocrine**
- Irregular menstrual cycle due to erratic estrogen production
- Decreased serotonin and norepinephrine

**Cardiovascular**
- Cardiac arrhythmias (from electrolyte imbalances)

**Pulmonary**
- Aspiration pneumonia related to regurgitation

**Other**
- Bags under eyes
- Broken facial blood vessels
- Muscle weakness
- Fainting
- Problems with vision
- Elevated plasma pH and \( \text{HCO}_3^- \) due to acid loss with purging
- Electrolyte imbalances due to mineral loss with purging

**Digestive**
- Digestive irregularities (gas, bloating, cramps)
- Constipation
- Reflux of stomach’s contents and heartburn
- Loss of tooth enamel and gum disease from gastric acid during vomiting
- Swollen parotid glands in neck region (chipmunk cheeks)
- Loss of gag reflex
- Internal bleeding
- Ulceration and/or perforation of esophagus
- Esophagitis related to gastric acidity
Bulimia Nervosa

- Characterized by frequent episodes of binge eating, followed by purging, laxative abuse, fasting, or extreme exercise and intense feelings of guilt or shame
- More common than anorexia nervosa
- Approximately 2–4% of adolescents and adults in the general population are bulimic.
- Primarily female
- Can have a normal weight or be obese
Bulimia Nervosa (cont.)

- Most persons with bulimia nervosa meet standards for major depressive disorders
  - Loss of interest
  - Low mood
  - Shortened attention span
  - Disrupted sleep patterns
  - Suicidal thoughts
- Bulimics abuse alcohol and drugs at a higher rate than the general population
Neuroendocrine
- Irregular menstrual cycle due to erratic estrogen production
- Decreased serotonin and norepinephrine

Cardiovascular
- Cardiac arrhythmias (from electrolyte imbalances)

Pulmonary
- Aspiration pneumonia related to regurgitation

Other
- Bags under eyes
- Broken facial blood vessels
- Muscle weakness
- Fainting
- Problems with vision
- Elevated plasma pH and HCO₃⁻ due to acid loss with purging
- Electrolyte imbalances due to mineral loss with purging

Digestive
- Digestive irregularities (gas, bloating, cramps)
- Constipation
- Reflux of stomach's contents and heartburn
- Loss of tooth enamel and gum disease from gastric acid during vomiting
- Swollen parotid glands in neck region (chipmunk cheeks)
- Loss of gag reflex
- Internal bleeding
- Ulceration and/or perforation of esophagus
- Esophagitis related to gastric acidity
Binge-Eating Disorder (BED)

- Characterized by recurrent episodes of binge eating
- Occur often without subsequent purging or abusing laxatives to compensate for overeating
- Psychiatrists define the disorder as episodes of binge eating at least twice a week for at least 6 months and that cause significant emotional distress.
- Eat more rapidly than normal until they can no longer consume additional food
- 2% of the U.S. population (1–2 million people) and about 30% of Americans treated for obesity experience BED.
The Role of a Sport in Eating Disorders

- Does dedication to training for a specific sport induce development of an eating disorder?
- Do individuals with potentially pathologic concerns about body size and shape gravitate to the sport?
- Research must determine whether the inordinate focus of many athletes on food intake and leanness reflects a continuum of graded psychological disturbance that ultimately leads to a full-blown eating disorder.
- The attraction to sport hypothesis
Eating Disorders Affect Exercise Performance

- Semistarvation, purging, and excessive exercising adversely affect health, energy reserves, and physiologic function and the ability to train and compete at an optimal level.
- Chronic restriction of energy intake or reduced energy availability through purging rapidly depletes glycogen reserves.
- Reduced protein intake contributes to lean tissue loss.
Management of Eating Disorders in Athletes

- Effective treatment focuses primarily on the psychological realm and attempts to reverse the negative effects of disordered eating behaviors.
- Successful treatment usually involves a team approach using psychotherapeutic, medical, nutritional, and family support.
- The process consists of four steps:
  - Identify and isolate the contributing factors
  - Formulate appropriate goals for intervention and prevention
  - Formulate long-term strategies to deal with the problem
  - Initiate long-term programs to address the situation
BMD Values in Anorexic Women (n=10)

<table>
<thead>
<tr>
<th>BMD, g·cm⁻²</th>
<th>Percent of normals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Head</strong></td>
<td>1.97 .26</td>
</tr>
<tr>
<td><strong>Arms</strong></td>
<td>0.74 .04</td>
</tr>
<tr>
<td><strong>Legs</strong></td>
<td>1.03 .09</td>
</tr>
<tr>
<td><strong>Trunk</strong></td>
<td>0.77 .05</td>
</tr>
<tr>
<td><strong>Spine</strong></td>
<td>0.83 .06</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0.99 .06</td>
</tr>
<tr>
<td><strong>L2-L4</strong></td>
<td>0.99 .08</td>
</tr>
<tr>
<td><strong>Neck</strong></td>
<td>0.87 .09</td>
</tr>
</tbody>
</table>
Identify factors that can contribute to eating disorders

Define goals specific to the athletic environment

Develop strategies to alleviate factors

Create educational model addressing factors

Copyright © 2009 Wolters Kluwer Health | Lippincott Williams & Wilkins
Therapeutic Methods to Treat Eating Disorders

- Cognitive–behavioral therapy
  - Focuses on teaching the patient to identify, monitor, and modify dysfunctional attitudes, core beliefs, and eating habits to lessen binges and “retrain” normal hunger and satiety responses

- Interpersonal psychotherapy
  - Therapist emphasizes the importance of body fat for the return of menses and normalization of reproductive functions.

- Pharmacologic treatment