Eating Disorders in Athletes

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Objectives

- Learn how to identify eating disorders in male and female athletes
- General principles of treatment of eating disorders in athletes
How did I get into this field?
Eating Disorders

- Eating disorder statistics in the general population
  - For women, less than 1% for anorexia nervosa, 1-2% for bulimia nervosa and 3-5% for partial syndromes
  - Statistics on men are not really available or very accurate, but the prevalence is much lower, which may be in part due to underreporting
- Eating disorder statistics in athletes
  - Overall prevalence is higher than in the general population and even higher in female athletes and sports that emphasize leanness
  - Sports that emphasize leanness generally include endurance sports, such as running, and aesthetic sports, such as gymnastics

Diagnostic Criteria
Definition of Eating Disorders

- The DSM-5 (Diagnostic and Statistical Manual of Mental Illness 5th Edition) is used to define eating disorders
- The big change between the previous version (DSM-IV-TR) and the current version is that amenorrhea is no longer a criteria for anorexia nervosa
  - This change acknowledges that eating disorders can occur in men as well as women

Anorexia Nervosa - Diagnostic Criteria

- Restriction of energy intake relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health. Significantly low weight is defined as a weight that is less than minimally normal or, for children and adolescents, less than that minimally expected.
- Intense fear of gaining weight or of becoming fat or persistent behavior that interferes with weight gain, even though at a significantly low weight.
- Disturbance in the way in which one’s body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.
Anorexia Nervosa

- **Types**
  - Restricting type
  - Binge-eating/purging type
- **Demographics**
  - Lifetime prevalence: 0.9% women, 0.3% men
  - Typically develops between ages 12 and 13
  - Highest mortality rate of ALL psychiatric illnesses - 0.56% per year mortality in young women, which is 12-fold higher than the general population

Anorexia Nervosa

- **Signs of Anorexia Nervosa**
  - Emaciation
  - The more obvious sign in adults is weight loss, but in children and adolescents, you can’t just look for weight loss.
    - Altered growth curve - you will see this in children and adolescents when they “fall off” their growth curve
  - Menstrual disturbances
  - Lanugo - soft, downy body hair
  - Brittle hair and nails
  - Hair loss and/or thinning on scalp
Bulimia Nervosa - Diagnostic Criteria

- Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
  - Eating in a discrete period of time (e.g., within a 2-hour period), an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances.
  - A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).

- Recurrent inappropriate compensatory behaviors in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or other medications; fasting or excessive exercise.

- The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for 3 months.

- Self-evaluation is unduly influenced by body shape and weight.
Bulimia Nervosa

- Demographics:
  - Lifetime prevalence: 1.5% women, 0.5% men

- Signs of Bulimia Nervosa
  - Salivary gland hypertrophy resulting in a “chipmunk” appearance - this is caused by repetitive vomiting
  - Erosion of dental enamel by stomach acid from vomiting
  - Calluses on the back of dominant hand (Russell’s sign)
  - Mouth ulcers
Other Specified Feeding or Eating Disorders

- Atypical Anorexia Nervosa: all of the criteria for anorexia nervosa are met, except that despite significant weight loss, the individual’s weight is within or above the normal range.

- Bulimia nervosa (of low frequency and/or limited duration): All of the criteria for bulimia nervosa are met, except that the binge eating and inappropriate compensatory behaviors occur, on average, less than once a week and/or for less than 3 months.

Unspecified Feeding or Eating Disorders

- Formerly known as Eating Disorder NOS

- This category applies to presentations in which symptoms characteristic of a feeding and eating disorder that cause clinically significant distress or impairment in social, occupational, or other important areas of functioning predominate but do not meet the full criteria for any of the disorders in the feeding and eating disorders diagnostic class.
Medical Complications

- Cardiovascular
  - Bradycardia - may see heart rate in the 30's, which will be even lower at night when they are sleeping
  - Dizziness, low blood pressure
  - Sudden cardiac death
  - Cardiac arrhythmias - a dangerous complication in bulimia nervosa due to the electrolyte disturbance caused by vomiting
Medical Complications

- Gastrointestinal
  - Decreased motility of the intestines resulting in constipation
  - Tears of the esophagus can occur in bulimia nervosa due to repetitive vomiting

- Endocrine
  - Infertility
  - Decreased function of thyroid
  - Osteoporosis - in adolescent patients, this can result in permanent stunting of growth

- Renal
  - Kidney stones
  - Refeeding syndrome - VERY dangerous! This is when malnourished patients are fed too quickly and the shift in electrolytes can cause cardiac failure
Eating Disorders in Athletes

- Eating disorders occur more frequently among athletes than the general population
  - Estimates vary greatly from study to study as the athlete type and sport is not consistent across the studies
  - Estimates in athletes vary from 10% to 20% or more
- Disordered eating is a broad spectrum
  - For athletes, it typically starts with healthy dieting that can progress to more restrictive weight control and/or increase exercise
  - These unhealthy habits may be reinforced by fellow athletes, coaches and/or improved performance, which can lead to a full-blown eating disorder
Eating Disorders in Athletes

- Prevalence of eating disorders is higher in female athletes
  - A study by Sundgot-Borgen et al. of elite Norwegian athletes found 20% of female and 8% of male athletes met criteria for Eds – GET NEW STAT!!
  - Prevalence is also higher in sports that emphasize leanness

NCAA Study on Eating Disorders in Athletes

- 1,445 student athletes from 11 Division 1 schools
- Among female athletes, the mean desired body fat was 13% and the mean actual body fat was 15.4%
  - Healthy body fat for women is 17% - 25%
  - 173 female participants had a BMI considered unweight
- Among male athletes, the mean desired body fat was 8.6% and the mean actual body fat was 10.5%
  - Healthy body fat for men is 10% - 15%
- 9.2% of female athletes and .1% of male athletes had bulimia nervosa
- 2.85% of female athletes had anorexia nervosa
Female Athlete Triad

- Combination of amenorrhea, osteoporosis/osteopenia and disordered eating
- Disordered eating may be due to lack of nutritional information and thus the athlete is simply not aware of how many calories they need. This can be helped with education.

Why are athletes at increased risk?
Sport-Specific Body Ideals

- Athletes are under pressure to conform to an ideal sport-specific body type.
- It is generally accepted among athletes and coaches that thinness will result in improved performance, although this is not true.
- Some sports that reward or require low weight may have even more pressure.

Certain Sports are Considered Higher Risk for Eating Disorders

- Aesthetic sports such as gymnastics and figure skating due to the importance of appearance in judging.
- Weight class sports such as wrestling as athletes will try to be the lowest weight possible with the most amount of strength possible.
- Endurance sports such as cross country and distance events in track due to the belief that leanness improves performance.
Uniforms
Personality Characteristics

- The personality of athletes may also result in increased risk for development of eating disorders, especially elite athletes.
- Athletes tend to be perfectionistic, goal-oriented, competitive and concerned with the outcome of performances.
- Although these characteristics tend to result in success for athletes, these are also the same characteristics that have repeatedly been seen in individuals with eating disorders, especially anorexia nervosa.

Timing of Athletic Competition

- Most athletes, in order to be successful, must be competitive from a young age.
  - This makes the body changes of puberty more difficult for athletes, especially if the body changes have an impact on performance.
  - This is very commonly seen in female gymnasts.
- Most competition takes place during adolescence, which is the typical onset of eating disorders.
Where do athletes play after college?

Although there are opportunities in football, baseball, hockey and basketball, there are very few other professional sports where athletes can make a living.

- Track and Field: Approximately 50% of our athletes who rank in the top 10 in the USA in their event make less than $15,000 annually from the sport (sponsorship, grants, prize money, etc.).
- Many MLS (Major League Soccer) players make as little as $50,000 per year

This is most evident in gymnastics, where the “typical” age of retirement is before age 20 years

Coaches

Coaches can have a very significant impact on the life of an athlete - whether for good or bad.
Eating Disorders in Male Athletes

Male Athletes

- Estimates of eating disorders in male athletes are likely low as it can be more difficult to identify eating disorders in male athletes
- The sport-specific body type ideal in men tends to be lean, but also muscular
Male Athletes

- Eating disorders are also more common among male-dominated sports that require strict weight control, such as wrestling.
- However, it is difficult to identify male athletes with EDs and are thus more difficult to treat.

Consequences of eating disorders in athletes
Consequences of eating disorders in athletes

- Eating disorders in athletes can have serious medical consequences, such as impaired muscle and skeletal health due to low energy availability.
  - Athletes are at increased risk for these consequences due to the increased physiologic demands from training and competition.
  - Athletes with eating disorders may require more time to recover from injuries versus healthy athletes.

Consequences of eating disorders in athletes

- Eating disorders can have a significant impact on athletic performance, including reduced sport performance due to dehydration or fatigue and increased risk for injury.
How to identify eating disorders in athletes

Identifying athletes with eating disorders

- It can be difficult to identify eating disorders in athletes because athletes training to improve performance may have characteristics that overlap with disordered eating behaviors, but are not necessarily pathological.
Signs of eating disorders in athletes

- Frequent injuries or season-ending injuries
  - Examples: Pulled muscles that take longer than usual to recover from, stress fractures
- Weight loss or drop-off growth curve in adolescents
- Recent increase in athletic activity without an upcoming “A” competition
  - In high school athletes or club athletes, this may include additional cardiovascular training outside of practice
- Decrease in performance

- Following a specific diet to improve performance
  - The type of diet can also be a sign.
  - For example, the majority of athletes would not need to follow a low-carb diet whereas a high protein diet can be normal.
- Avoidance of rest days
- Unhappiness with performance weight
  - Are they actively trying to lose weight? How much weight?
- Use of diet pills, laxatives, diuretics, caffeine
- Irregular periods
Signs of eating disorders in athletes

- Special considerations for male athletes include:
  - Preoccupation with muscular development
  - Anabolic steroid use
  - Frequent weight fluctuations - can often be seen in wrestling, rowing and body building
  - Preoccupation with power-to-weight ratio
  - Binge eating for muscle/weight gain

Bottom line: In the athlete, many of these signs alone are not enough because many of these signs could be normal in an athlete.

But if multiple signs are present, this should raise suspicion for an eating disorder.
What to do about it?

Prevention

- Educate athletes on the dangers of low body weight and that leanness does not result in improved performance
- Promote TOTAL health that does not focus on weight as it is a poor indicator of overall health, especially in athletes who may be heavier due to muscle mass
- Eliminate public/team weighs-ins
- Eliminate careless remarks or ridiculing athletes regarding weight
Screening

- The American College of Sports Medicine and the International Olympic Committee have released statements supporting regular screening for DE in athletes.
- Early detection of disordered eating through screening can prevent progression to full blown eating disorders by utilizing interventions and education.

Screening

- There are currently screening tools available, but most of the tools were created for female athletes or elite athletes only.
- There is no current screening tool that can be used in both male and female athletes of all ages, all sports and all levels of competition.
Screening

- Commonly used screening tools:
  - Eating Attitudes Test (EAT-26)
  - Eating Disorder Examination-Questionnaire (EDE-Q)
  - Eating Disorder Inventory (EDI)
  - Child Eating Attitudes Test (CHEAT)
- It is unknown how accurate these screening tools are in athletes

Medical Evaluation
Evaluation

- First: identify if the patient requires immediate hospitalization and stabilization
  - Are the vital signs dangerously abnormal?
  - Is the patient refusing to eat anything?
- Check vital signs, including weight, height, blood pressure and pulse. Calculate BMI.
  - If patient complains of dizziness on standing, check orthostatic blood pressure as well

Labs and other tests

- Labs: urinalysis with specific gravity, CBC, CMP, amylase, lipase, phosphorous, magnesium, and thyroid function tests
- EKG: especially if the patient is complaining of chest pain
- Bone density: this test is not urgent, but should be completed at some point for female patients who have had amenorrhea for 3 months or greater
  - No specific recommendation for males but likely would be a good idea for male patients who have maintained an unhealthy weight for 3 months or greater
Where do patients go?

- Outpatient therapy - lowest level of care, can only use this option when patients are medically stable.
Where do Patients Go?

- If an athlete with an eating disorder is being treated outpatient, they will likely need a team of providers, at least in the early stages
  - Registered Dietitian
  - Therapist/Psychologist - it is important to find a therapist who is experienced in the treatment of eating disorders
  - Pediatrician/Primary Care Physician- must monitor labs, height, weight, and other vital signs
  - Psychiatrist - although research has not found any medication to be effective in treating anorexia nervosa, if the athlete had pre-existing psychiatric conditions (anxiety, depression, OCD), than psychiatric medication may be beneficial

Where do Patients Go?

- Partial Hospitalization Program - patients go to the program during the day for treatment sessions but go home at night
  - The University of Michigan has a partial program
  - These can be a big time commitment for the family because many programs require involvement of the family, but this is an important component of treatment
Where do Patients Go?

- Residential - patient lives at the facility and attends treatment sessions with therapists, nutritionists and a psychiatrist during the day
  - Typically not covered by insurance or only partially covered by insurance and can cost $10,000 to $30,000 per month and the average stay is 3 months
  - There are no residential treatment programs in Michigan

Where do Patients Go?

- Inpatient hospitalization - when patients are medically compromised and need medical treatment for stabilization
  - Must use this setting when severely underweight patients are refusing to eat and they need to be force fed by feeding tubes
  - There are some residential programs that have an “ICU” where they can care for medically unstable patients and utilize feeding tubes as needed
American Academy of Pediatrics
Criteria for Inpatient Hospitalization in Eating Disorders

**Anorexia nervosa**
- Heart rate < 50 beats/min daytime; < 45 beats/min nighttime
- Systolic blood pressure < 90 mm Hg
- Orthostatic changes in pulse (> 20 beats/min) or blood pressure (> 10 mm Hg)
- Arrhythmia
- Temperature < 96°F
- < 75% ideal body weight or ongoing weight loss despite intensive management
- Body fat < 10%
- Refusal to eat
- Failure to respond to outpatient treatment

**Bulimia nervosa**
- Syncope
- Serum potassium < 3.2 mmol/L
- Serum chloride < 88 mmol/L
- Esophageal tears
- Cardiac arrhythmias including prolonged QTc
- Hypothermia
- Suicide risk
- Intractable vomiting
- Hematemesis
- Failure to respond to outpatient treatment

**Medications**

- Studies have shown only limited benefit of medications in the treatment of anorexia nervosa.
- Antidepressants, including selective serotonin reuptake inhibitors (SSRIs), may help mitigate symptoms of depression and suicidal ideation in patients with anorexia nervosa.
- However, they have not proved beneficial in facilitating weight restoration or preventing relapse
Medication

- Although case reports and recent preliminary studies have suggested a role for atypical antipsychotics such as olanzapine (Zyprexa), controlled studies have not demonstrated significant benefit in patients with anorexia nervosa.

Medication

- In patients with bulimia nervosa, studies have suggested SSRIs may be beneficial in decreasing the frequency of binge eating and purging.
- The addition of an SSRI might be considered for patients who are not responding to an initial trial of psychotherapy and for patients with major depression or another comorbid disorder responsive to antidepressant medications.
Questions?

References

- https://www.aafp.org/afp/2015/0101/p46.html
References


References


