Objectives

At the end of this presentation, participants should understand

1) Modification of an athlete’s weight may help optimize athletic performance and health
2) Basic factors to consider for healthy weight loss and weight gain; energy balance
3) Cautions related to both weight loss and weight gain

Overall Principles

- Important to review weight goals with athletes as well as identify who will monitor, how often, and what is being measured
- Weight goals, both for weight gain and weight loss, should be realistic
- Factors to consider; gender, sport, physical maturity, medical, psychological & weight history
- Weight modifications should be implemented in off-season
- Current body weight and composition as well as diet and activity habits important in evaluation
- Periodic food records useful in monitoring progress
- Consider expertise of sports dietitian for ongoing and/or complicated situations
- Changes ideally made by following body composition (not body weight)
- **Useful recommendations (TPCC in press, NATA position stand 2011)**
  - Special Considerations
    a. Weight restriction sports (e.g. wrestling, jockeys, crew, sprint football)
    b. Under-nutrition; athletes at risk for eating disorders
    c. Overweight athletes & their risk for injury

General Nutrition

- Adequate nutrition, in form of fluids and fuels, necessary to provide energy for general health and well being, as well as training, competition, & recovery.
- Athletes can meet all of their needs from a well balanced nutritional plan that supports performance, hydration, recovery and overall health.
• In select medical situations, supplementation may be useful (e.g. iron, calcium, and/or vitamin D deficiency)

• Sports dietitians (Registered dietitian with expertise in sport) may be useful as part of sports medicine team

• General nutritional intake recommendations
  - Carbohydrate; 6-10 g/kg body wt/day, 50-70% total calories
  - Protein; 1.2-1.7 g/kg/body weight per day, can range from 10-35% total calories
  - Fat intake; 20-35% of total energy intake
  - Micronutrients; essential and should be consumed at RDA. Athletes diet’s often low in calcium, vitamin D, B vitamins, iron, zinc, magnesium, and antioxidants such as vitamin C and E, beta-carotene and selenium
  - Vegetarians may need additional nutritional advice

**Weight Gain**

• Positive energy balance; occurs when energy intake exceeds energy expenditure → weight gain

• Ideally intake modified such that increase in lean body mass occurs not increase in body fat

• Protein intake should be at upper range of recommended protein levels

• Additional 500-1,000 kcal/day along with appropriate strength training program will result in increase in lean muscle mass. If greater than 2-3 # per week; not all lean muscle mass

• Hydration should be maintained

• Increase frequency of meals / avoid skipping meals

• Increases in body fat instead of lean body mass, can be associated with immune system dysfunction & chronic disease

• Caution regarding use of supplements which claim to enhance weight gain

• **Special concerns in athletes with eating disorders/disordered eating**

**Weight Loss**

• Negative energy balance; occurs when energy expenditure exceeds energy intake → weight loss

• Risk for injury correlates with increased BMI in high school athletes (Yard ’11)

• Ideally intake modified such that muscle mass is maintained, and body fat is decreased

• Moderate decreases in energy intake along with increases in energy expenditure may preserve fat free mass and muscle strength while dieting
- Weight loss should be gradual; 0.5 – 2.0 # per week (net negative energy balance of 250-1,000 calories / day)
- Restrictive intakes are associated with inadequate micronutrient levels;
  - Female athletes should obtain at least 1200-1400 calories per day,
  - Male athletes should consume at least 1500-1700 calories per day
- Hydration should be maintained, and athletes participating in exercise and competition should be fueled appropriately
- Skipping meals can lead to compensatory overeating
- Aerobic exercise useful to increase energy expenditure, while resistance training may help preserve muscle mass
- Athletes at risk for disordered eating and eating disorders
- Weight loss can impair performance due to negative energy balance; impair immune function, alterations in mood, enzyme activity changes, structural alterations In muscle
- Rapid weight loss should be avoided; can result in cognitive dysfunction, compromised cardiac function, difficulties maintaining thermoregulation
- Caution regarding the use of fad diets, low calorie diets, weight loss drugs and other pathogenic weight control behaviors

Appendix 1 From Team Physician Consensus Statement (in press)

<table>
<thead>
<tr>
<th>SCENARIO</th>
<th>TYPES OF FOOD</th>
</tr>
</thead>
</table>
| WEIGHT GAIN | Cranberry juice has more calories than orange juice (170 vs. 120)  
Banana has more calories than apples (170 vs. 100)  
Cranola has more calories than granola (780 vs. 200)  
Bean soup has more calories than vegetable soup (130 vs. 80) |
| These examples give food selection that provides more calories and carbohydrates that are beneficial for weight gain yet maintaining a balanced and adequate diet. |  
Dried fruit like raisins  
Pretzels  
Yogurt  
English muffin with peanut butter  
Fat free fig bars |
| High carbohydrate/high calorie foods to help increase energy intake. |
When athletes have little opportunity to consume foods or the volume of foods becomes too much they may try:

- Fruit bread like banana bread, blueberry muffins
- Smoothies made with low fat milk, yogurt, and fresh fruit
- BAKED Tortilla chips/salsa

The athlete may have a balanced diet but simply eat too much. Even low calorie foods can cause an athlete to gain weight when eating bigger portions than needed. Try and estimate portion sizes by using the following:

- A tennis ball is about ½ cup serving
- Bagels should be about the size of hockey pucks
- 3 ounces of meat looks like a deck of cards
- A serving of fruit should be about the size of a tight fist
- 1 cup of milk is 8 ounces, 1 cup of yogurt is 8 ounces
- 1 slice of bread is a serving
- ½ bun is one serving; the whole bun is two servings
- One serving of cereal is ¾ of a cup not a bowlful
- 1 cup of lettuce is one serving
- 5-6 crackers are generally one serving.

### Appendix 2: From Team Physician Consensus Statement (in press)

<table>
<thead>
<tr>
<th>INSTEAD OF THIS:</th>
<th>TRY THIS:</th>
<th>CALORIES SAVED:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cup of 2% milk (120)</td>
<td>1 cup skim milk (80)</td>
<td>40</td>
</tr>
<tr>
<td>Tuna packed in oil (170)</td>
<td>Tuna packed in water (100)</td>
<td>70</td>
</tr>
<tr>
<td>Fast Food Double Hamburger (560)</td>
<td>Grilled chicken sandwich (400)</td>
<td>160</td>
</tr>
<tr>
<td>Extra large French fries (610)</td>
<td>Small French fries (210)</td>
<td>400</td>
</tr>
<tr>
<td>Fast Food Breakfast Sandwich (300)</td>
<td>English muffin (150)</td>
<td>150</td>
</tr>
<tr>
<td>Fast Food Shake (900)</td>
<td>Small Vanilla Cone (150)</td>
<td>750</td>
</tr>
<tr>
<td>6&quot; Meatball Sub (540)</td>
<td>6&quot; Turkey Sub (280)</td>
<td>260</td>
</tr>
<tr>
<td>Fast Food Fried Chicken (400)</td>
<td>Grilled Chicken Breast (170)</td>
<td>230</td>
</tr>
<tr>
<td>Caesar Salad (520)</td>
<td>House Salad (300)</td>
<td>220</td>
</tr>
<tr>
<td>Taco Salad (790)</td>
<td>Cheese Quesadilla (490)</td>
<td>300</td>
</tr>
<tr>
<td>16 oz Caramel Blended Coffee (430)</td>
<td>16 oz Nonfat Latte (160)</td>
<td>270</td>
</tr>
</tbody>
</table>
References


