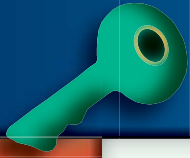


LESSON 4



Understanding Your Body Image



Quick Write

Many magazines and electronic media sources alter body images of young people and adults so they appear in the photo as thinner, heavier, or taller than they really are. Are these photos realistic? Should this really be done? Write down your opinions on this topic.



Learn About

- what is body image?
- weight problems and diet
- managing your appropriate weight
- the dangers of eating disorders

"The next time you look into the mirror, try to let go of the story line that says you're too fat or too shallow, your eyes are too small or your nose too big; just look into the mirror and see your face. When the criticism drops away, what you will see then is just you, without judgment, and that is the first step toward transforming your experience of the world."

Oprah Winfrey

What Is Body Image?

How do you react when you look at yourself in the mirror? How do you feel about your appearance? *The way you see your physical self* is called your **body image**. Someone who feels good about his or her looks is more likely to have a positive self-image. Trying to look the same as a model, athlete, or anyone else can be unhealthy and unrealistic.

You should recognize that no individual weight or body type is ideal for a specific age. Your body will grow and change throughout your teen years. A few extra pounds now, for example, could disappear in a few months after you grow an inch. Someone who feels too skinny may gain weight after he or she stops growing. Physical activity will also have an effect on your body weight and shape.

Your Appropriate Weight

Many factors influence your **appropriate weight**, or *the weight that is best for your body*. Gender, height, age, body frame (small, medium, or large), and, during your teen years, your growth pattern are among these factors.



Vocabulary

- body image
- appropriate weight
- body composition
- Body Mass Index (BMI)
- overweight
- underweight
- malnutrition
- osteoporosis
- anabolism
- catabolism
- endocrine system
- Basal Metabolic Rate (BMR)
- fasting
- obsession
- eating disorders
- anorexia nervosa
- bulimia nervosa
- binge eating disorder

Body Composition

In Lesson 3, you learned about the first three elements of fitness. They are aerobic capacity, muscular strength and endurance, and flexibility. The fourth element is **body composition**, *the ratio of body fat to lean body tissue, such as bone, muscle, and fluid*. One way to measure body composition is to use **Body Mass Index (BMI)**, *a measurement that allows you to assess your body size, taking your height and weight into account*. BMI is a reliable indicator of body fatness and can be used to identify possible weight problems in young people and adults. BMI is used to compare your weight relative to your height and to estimate your total body fat. Here is how to calculate your BMI: $w(\text{lbs})/h(\text{in})^2$:

STEP 1 Write down your weight in pounds (lbs)

STEP 2 Write down your height in inches (in)

STEP 3 Square your height (height \times height)

STEP 4 Divide your weight by your height squared:
 $w(\text{lbs})/h(\text{in})^2$

STEP 5 Multiply by 703 to find BMI

Example:

Body Mass Index can be calculated using pounds and inches with this equation:

$$\text{BMI} = \frac{(\text{Weight in pounds})}{(\text{Height in inches}) \times (\text{Height in inches})} \times 703$$

For example, a person who weighs 220 pounds and is 6 feet 3 inches tall has a BMI of 27.5.

$$\frac{(220 \text{ lbs})}{(75 \text{ in}) \times (75 \text{ in})} \times 703 = 27.5$$

BMI Considerations

BMI is used as a screening tool to identify possible weight problems for young people. Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics (AAP) recommend the use of BMI to screen for overweight and obesity in young people beginning at two years old.

keys to LEADERSHIP

The best ways to improve and maintain a healthy body composition are by eating nutritious, low-fat, low-sugar foods, and participating in regular physical activity.

For young people, BMI is used to screen for obesity, overweight, healthy weight, or underweight. However, BMI is not a diagnostic tool. For example, a young person may have a high BMI for their age and sex.

You are more likely to feel good about yourself and have the energy you need for peak performance if your weight is at an appropriate level.

Weight Problems and Diet

Being overweight or underweight is unhealthy. People who are **overweight** weigh more than the appropriate weight range for gender, height, age, body frame, and growth pattern. People who are **underweight** weigh less than the appropriate weight range for gender, height, age, body frame, and growth pattern. Because of pressure placed on young people from family, friends, and social images, they can become overly concerned that they have a weight problem. In reality, most young people don't need to lose or gain weight. In fact, unnecessary dieting can interfere with normal growth and development.

Overweight

Eating foods with high amounts of sugar and fat or eating more food than needed can lead to weight gain. This is especially true for people who are *sedentary*, a term we learned from the previous lesson involves a lot of sitting and very little exercise. Many times, people tend to eat foods with empty calories or low nutritional value; this may result in overeating because you may not feel full. As we learned from Lesson 2, *empty calorie* foods have high amounts of sugar and fats, and do not contain the full range of vitamins and nutrients the body needs to be healthy.

Many young people tend to grab food from fast-food places and convenience stores. Much of this food is high in fat, sugar, and empty calories. Some fast-food restaurants even allow supersize portions, which attract people to them through bargain prices and other selling techniques. These supersize portions may come at a bargain price, but they also come with much more fat, sugar, and calories.

If you have a sedentary lifestyle, this may make you more prone to weight gain. Many jobs require people to spend their day sitting at a desk. At home, many people watch too much television, play video games, or stay on a computer for long periods. These activities burn fewer calories than those involving physical movement.

As we have discussed in previous lessons, excess weight puts strain on the heart and lungs. Overweight people have an increased risk of developing high blood pressure, diabetes, heart disease, cancer, and stroke. If you think that you are overweight, check your BMI, review the results, and if necessary check with a health care professional. You may just be gaining weight before getting taller. This is the body's way of storing up extra energy for growing.

Underweight

Young people who appear skinny are not necessarily underweight. Some are simply growing taller first. After reaching a certain height, the body may take time to catch up and add shape and muscle.

Some people are underweight because they do not consume enough nutrients, eating mostly empty calorie foods. Others are underweight because of extreme dieting or excessive exercise. As we have learned in previous lessons, foods with the right amount of nutrients and calories provide the best foundation for staying healthy. Being underweight increases health risks just as much as being overweight.

Being underweight may indicate **malnutrition**, *a condition in which the body doesn't get the nutrients it needs to grow and function properly*. Being underweight may lower your body's ability to recover from illness, fight infections, and heal wounds.

According to a study published in 2010 in *The Baltic Journal of Health and Physical Activity*, underweight people have lower bone mass densities. This may lead to **osteoporosis**, *a condition marked by bone loss, brittle and fragile bones, bone pain, and increased risk of fractures to bones*. Although seen more in older people, being underweight can lead to osteoporosis in young people.

People who often feel tired due to lack of nutrients that supply energy may be more likely to develop medical issues such as anemia, which is related to this low nutrient intake. Anemia is a deficiency of red blood cells. As we learned from a previous lesson, red blood cells help transport oxygen to our organs and muscles. Being underweight can also lower your immune system, making you more likely to catch colds or the flu.

The Role of Calories

The calories you take in and use every day affect your weight. As you remember, calories measure both the energy available in food and the energy your body uses. The more calories a food contains, the more energy it provides.

You consume calories whenever you eat and drink. When you take in the same number of calories that your body burns, your weight should remain the same. When your body burns more calories than you take in, you should lose weight. When you take in more calories than your body burns, you will gain weight. Your body converts and stores the extra calories as fat.



When you're thirsty, choose water instead of a soft drink. A 12-ounce can of cola may have 150 empty calories.

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A healthy eating plan is based on foods rich in nutrients rather than the number of calories they contain. Instead of eating two slices of pizza for lunch at 375 calories per slice, try a different approach. Eat one pizza slice (375 calories), a garden salad (180 calories), an apple (110 calories), and an orange (85 calories). Each choice totals 750 calories, but the nutrients in the second choice are far greater.

The body is good at storing fat cells for future energy use. Storing fat above or below your BMI is unhealthy, and can lead to medical problems. On average, teen females require 2,200–2,400 calories per day, and teen males require 2,800–3,200. If you are counting calories, eating too much or too little in a given day is less important than focusing on your average intake over the long term.

Managing a healthy weight also requires more than counting calories. Make sure you consider the nutrient value of the foods you eat and stay away from empty calorie foods.

Managing Your Appropriate Weight

An earlier recommendation suggested that if you think you might be over or under your appropriate weight, you should check with a health care professional. This person can analyze your situation and suggest the best approach for you to manage weight. Most successful weight-change programs combine increased physical activity with a healthy eating plan that includes nutrient-dense foods.

Increasing Physical Activity

There is one key ingredient whether you are trying to lose or gain weight. Physical activity is the key to keeping a healthy weight. As you learned earlier, physical activity helps tone muscles and reduce body fat. You can also burn more calories by increasing your level of activity. The following box lists some of the other benefits of regular physical activity.

Adjusting Your Calorie Intake

Whether the goal is to lose or gain weight, eating foods with nutritional value will provide the best chance for reaching your goal. Instead of fried foods, you should eat foods that are broiled, baked, or steamed. If you do a little of your own cooking, you can add flavor by using herbs and spices instead of oils or cream sauces. Drinking fewer drinks with high amounts of sugar or caffeine will also help. Drinking more water or drinks that replenish nutrients will also help manage your intake of calories.

When you are increasing or reducing calorie intake, it's always best to eat more servings of lean and low-fat foods, including those with complex carbohydrates, such as whole grain breads, pastas, and fresh vegetables. Whether you want to reduce or increase calorie intake, use information from the Dietary Guidelines for Americans or ChooseMyPlate.gov.

Physical Activity and Your Weight

Physical activity helps you manage your weight and stay healthy.

How do you stay physically active?

Physical Activity...

- A** Helps you manage stress.
- B** Can help strengthen and firm muscles.
- C** Helps your heart and lungs work better.
- D** Burns calories and helps you maintain a healthy weight.
- E** Helps you feel good, have more energy, and develop higher self-esteem.



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Managing Weight Change

There are no shortcuts to managing your weight. Exercise and a good diet provide the best chance for success and long-lasting results. Experimenting with fad diets, pills, and other “procedures” that promote quick weight loss can be dangerous to your health. Most of these are short-term solutions at best, and they cannot replace informed, healthy choices about weight change. In fact, these “quick fix” techniques may lead to an unhealthy loss of water and lean muscle instead of fat. The majority of fad diets promote eating very few calories, eliminating certain healthy foods, or skipping meals altogether. Most of these “diets” are ineffective and not medically proven. Among other problems, they can lead to serious nutritional deficiencies.

When you’re trying to manage your weight, it’s good to understand how your body uses the food you eat. As we have learned, metabolism is the way your body processes everything you eat and drink, changing sugar, protein, and fat into energy. It’s a never-ending, two-part process of anabolism and catabolism. **Anabolism** is when energy is created and stored from food. **Catabolism** is when energy is released for use. All of this is controlled by the **endocrine system**, the system in charge of many of our body’s processes, from cell and tissue growth and repair to reproductive functions and mood regulation.

While you can't directly control how your metabolism works, you can control what you eat, how much you eat, and how much physical activity you get every day. These three factors influence your metabolism. It always comes back to diet and exercise, doesn't it?

Everyone's body works differently, and everyone will have a different *metabolic rate*. The trick is to figure out how fast or slow your metabolism is. If you measure your Basal Metabolic Rate (BMR), you can then tailor your caloric and exercise needs to fit how your body works.

Basal Metabolic Rate (BMR) *measures how many calories you burn when you're doing nothing.* (Remember, even when you're not active, your body is still using energy for breathing and other basic functions that keep you alive.) It's calculated based on your age, gender, height, and weight factors. Figure 3.14 shows the formula for calculating BMR.

Your metabolism is individual to you, based on a combination of your genetics, age, gender, muscle mass, and certain environmental factors. While your best friend who is able to eat anything and still stay slim seems to have a faster metabolism, it's not likely her metabolic rate that's creating such a difference. She's working with a balance of how many calories she eats, how much she exercises, how much muscle mass she has, and how much she sleeps.

Basically, weight management comes down to this: the more active you are, the more calories you burn. That means how much physical activity you get in a day has more impact on your weight loss and gain than a fast or slow metabolism. When you're trying to lose or maintain weight, physical activity is one of the most important factors because it's under your control—you choose how sedentary or active you want to be. Figure 3.15 shows how to use the Harris Benedict Equation to determine your daily calories needs.

The **BMR formula** uses the variables of height, weight, age, and gender to calculate the Basal Metabolic Rate (BMR). This is more accurate than calculating calorie needs based on body weight alone. The only factor it omits is lean body mass and the ratio of muscle to fat a body has. Remember, leaner bodies need more calories than less lean ones. Therefore, this equation will be very accurate in all but the very muscular (will underestimate calorie needs) and the very overweight (will overestimate calorie needs).

BMR Formula:

Women: $BMR = 655 + (4.35 \times \text{weight in pounds}) + (4.7 \times \text{height in inches}) - (4.7 \times \text{age in years})$

Men: $BMR = 66 + (6.23 \times \text{weight in pounds}) + (12.7 \times \text{height in inches}) - (6.8 \times \text{age in years})$

FIGURE 3.14

Basal Metabolic Rate (BMR)

The **Harris Benedict Equation** is a formula that uses your BMR and then applies an activity factor to determine your total daily energy expenditure (calories). The only factor omitted by the Harris Benedict Equation is lean body mass. Remember, leaner bodies need more calories than less lean ones. Therefore, this equation will be very accurate in all but the very muscular (will underestimate calorie needs) and the very overweight (will overestimate calorie needs).

Harris Benedict Formula:

To determine your total daily calorie needs, multiply your BMR by the appropriate activity factor, as follows:

Little or no exercise: Calorie calculation = $BMR \times 1.2$

Light exercise/sports 1–3 days/week: Calorie calculation = $BMR \times 1.375$

Moderate exercise/sports 3–5 days/week: Calorie calculation = $BMR \times 1.55$

Hard exercise/sports 6–7 days a week: Calorie calculation = $BMR \times 1.725$

Very hard exercise/sports and physical job: Calorie calculation = $BMR \times 1.9$

Total Calorie Needs Example:

If you are sedentary, multiply your BMR (1745) by 1.2 = 2094. This is the total number of calories you need in order to maintain your current weight.

FIGURE 3.15

BMR Calculator » Harris Benedict Equation

Muscle mass makes us strong, and it also helps us burn calories—during and after workouts. Strength training applies resistance to help build muscle mass. It usually includes exercises such as weightlifting or using a resistance band. Adding strength training to your workout routine will help build muscle mass and keep your bones strong. One pound of muscle burns about 15 calories a day, and while that’s still not much, it’s more about your total weight from muscle mass.

A University of Chicago study found that when we don’t get enough sleep, our endocrine system’s functions change. That includes our metabolism. And it’s not good. Getting half of the recommended sleep—four instead of eight hours of sleep each night—for just six nights alters how our bodies regulate blood sugar levels and store energy so much that otherwise healthy participants suddenly began to show early symptoms of diabetes.

If you average seven or eight hours of sleep per night, an hour more or less won’t make much of a difference. However, if you’re getting only four or five hours, another two or more hours will promote weight loss.



Developing healthful eating habits will help you maintain a healthy weight.

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Another factor that can affect our metabolic rate is how well hydrated we are. A study at the University of Utah found that people who are better hydrated have higher metabolic rates. Eight to twelve 8-oz. glasses of water every day will help your metabolic rate.

If you skip meals or severely reduce the number of calories you eat, your body compensates by slowing down your metabolism. This allows your body to save calories to handle basic functions. When you eat too many calories without also increasing your physical activity, those unused calories can mean weight gain.

Fasting, or *not eating for long periods*, is also a potentially dangerous way to lose weight. Fasting slows your metabolism, causing side effects including muscle tissue loss, heart damage, digestive problems, and stunted growth. Diet pills can be addictive and can have serious side effects. Body wraps cause water loss rather than loss of fat. With all these methods, weight may drop temporarily but usually returns quickly.

Recognize the Risks

Keeping in mind what you have just read about successful ways to manage your weight, here are some bad decisions that may put your health at risk:

- Following weight-loss programs that promise quick results
- Relying on special products or formulas
- Trying to lose more than $\frac{1}{2}$ to 1 pound per week
- Eating fewer calories a day than recommended from BMR calculation
- Skipping meals

Weight Management Tips

Maintaining a healthy weight means learning to eat smart and staying active for a lifetime. Working with a health care professional can help you develop a safe weight management program. A professional can assist you in setting realistic goals that are both safe and effective. Managing your portions will allow you to balance the calories you take in with those you burn. A good program of enjoyable physical activities like bike riding, dancing, volleyball, or swimming will help you burn enough calories to help you manage your weight.



A healthy weight management plan is not difficult to establish. You can maintain a healthy weight by first calculating your BMR, choosing nutritionally balanced meals, and getting regular exercise.

The Dangers of Eating Disorders

Many young people spend a great deal of time worrying about their weight or other problems. Sometimes these worries get out of control. An obsession can develop. An **obsession** is an emotional state in which something seems so important that you are always thinking about it. If food intake is coupled with mental and emotional problems, eating disorders can be the result. **Eating disorders** are extreme and damaging eating behaviors that can lead to sickness and even death.

Eating disorders can be triggered by many psychological factors. These include low self-esteem, poor body image, and depression. Young people are at risk because of the normal stresses during the teen years and the natural growth patterns of their bodies. Eating disorders are serious; they can be fatal. People with eating disorders need professional help.

Three dangerous eating disorders are anorexia nervosa, bulimia nervosa, and binge-eating disorder.

Anorexia Nervosa

Anorexia nervosa is an eating disorder characterized by self-starvation leading to extreme weight loss. *Anorexia* means “without appetite,” and *nervosa* means “of nervous origin.” Teenage girls and young women seem to be especially susceptible to this disorder, though men and teenage boys can also experience it.

Signs of anorexia nervosa include:

- An intense fear of gaining weight or being overweight.
- A highly distorted body image that continues to see fat where none exists.
- A refusal to maintain a normal body weight.
- A refusal to eat, or eating patterns that tightly restrict food intake.



Even when they are very thin, people with anorexia nervosa see themselves as fat.

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Many also have trouble coping with everyday stresses, such as high expectations, the need to achieve, or the need to be popular.

Because people with anorexia nervosa eat very little, they suffer malnutrition and develop shrunken organs, bone loss, low body temperature, low blood pressure, and a slowed metabolism.

Some people with anorexia can develop an irregular heartbeat that may lead to cardiac arrest. Treatment for anorexia nervosa may require a stay at a hospital or clinic. There, the affected person will receive treatment and the nutrients needed to restore physical health. Counseling is also provided to address underlying problems causing the disorder.

Bulimia Nervosa

Another type of eating disorder is bulimia, or bulimia nervosa. **Bulimia nervosa** is a condition in which a person eats large amounts of food and then tries to purge. Many people with bulimia force themselves to vomit. Others take laxatives to force the food quickly through their body. Although bulimia is more common among young women and teenage girls, young men and teenage boys can also develop the disorder. People with bulimia are extremely concerned about being thin and attractive. They have an overwhelming need to maintain control over their bodies. They might gorge on large amounts of food. Then, fearing that they are losing control of their bodies, they may take drastic steps to regain control. Some go on crash diets, including fasting, to try to make up for overeating.

Bulimia damages the body in many ways. Stomach acids from frequent vomiting can damage teeth and injure the mouth and throat. Vomiting can also cause the stomach to rupture. Repeated use of laxatives can damage the kidneys and liver, causing long-term health problems. Many people with bulimia suffer from malnutrition as a result of emptying the body of nutrients.

Signs of bulimia nervosa include:

- Regular binge eating episodes, at a rate of at least two per week for several months.
- Binges followed by purging, strict dieting, or excessive exercise to prevent weight gain.
- Using self-induced vomiting or laxatives as part of purging.
- An obsession with weight and body shape.

Binge Eating Disorder

Another eating disorder is **binge eating disorder**, or *the rapid consumption of an excessive amount of food*. This disorder may be the most common eating disorder, affecting one to two million Americans. People with binge eating disorder eat unusually large amounts of food at a time. Unlike people with bulimia, though, they do not rid their bodies of the food. Afterward, they often feel a sense of guilt and shame.

People with binge eating disorder may use food as a way of coping with depression and other mental or emotional problems. However, the guilt and shame they feel after bingeing adds to the depression. This creates a cycle that can be difficult to break without professional help. Because binge eating disorder often leads to excess weight, it contributes to many health problems, such as obesity, diabetes, and heart disease.

Signs of binge eating disorder include:

- Eating large amounts of food in a relatively short period, whether you are hungry or not, at least twice a week.
- Eating until you feel overly full.
- Eating large amounts of food when you are alone.
- Eating personal “comfort foods,” such as a certain type of cookies, ice cream, or other foods you find especially pleasurable, during sessions of excessive eating.

Other Unhealthy Eating Behaviors

There are other unhealthy eating behaviors that do not qualify as full-blown eating disorders. However, they still have serious effects on weight, mental health, and well-being. These behaviors are classified as disordered eating, a range of habits in which food is used primarily to deal with emotional issues.

- **Compulsive overeating**—Feeling the need to eat constantly and quickly, even when full. Often snacking around the clock instead of eating meals at a set time.
- **Extreme dieting**—Dieting and weight loss that become obsessions focused on each bite of food eaten and every pound of weight shed. While extreme dieters do not lose enough weight to have anorexia nervosa, they are at greater risk for developing anorexia nervosa.

Help for People with Eating Disorders

Eating disorders are potentially life-threatening. They affect people’s emotional and physical health. People who have eating disorders usually need professional help. Sometimes this help can come from a counselor or psychologist. Help is also available at community clinics and through support groups such as Overeaters Anonymous. A useful online resource is The National Eating Disorders Association (NEDA) website.

If a friend develops an eating disorder, you might want to speak to a school nurse or counselor. It is natural to want to solve your friend's problem by yourself. However, you can help most by showing support. Guide this individual to a health professional, if possible. Family and friends can also provide much-needed support for a person with an eating disorder. Often their role is to encourage the person to seek help. The box below takes a closer look at the role that family and friends can play.

Helping Someone with an Eating Disorder

Someone you know may have an eating disorder. Following these steps may enable you to help him or her.

A Encourage the person to seek help.

A person with an eating disorder may not be aware of the seriousness of the condition. The person may also deny that the problem exists and may not want to be helped.

B Tell an adult.

You can talk to your parent or guardian, the school nurse, a counselor, or another trusted adult to see if they can help the person get the needed help.

C Get professional help.

Psychological problems are usually the cause of eating disorders. The person with the disorder requires professional help. Sometimes family members are also encouraged to meet with the counselor.

D Encourage the person to join a support group.

Support groups provide encouragement to people with eating disorders and help them on the road to recovery.

E Recommend a follow-up.

Eating disorders can recur and could become lifelong problems. Follow-up visits to counselors and support groups are an important part of the recovery process.



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 **CHECKPOINTS**

Lesson 4 Review

Using complete sentences, answer the following questions on a sheet of paper.

1. Define body image.
2. What factors determine “appropriate weight”?
3. What can lead to weight gain?
4. Define malnutrition.
5. When managing weight, what else should you consider besides counting calories?
6. What do most successful weight management programs combine?
7. What is anabolism?
8. What does BMR measure?
9. What is an eating disorder?
10. Name four signs of anorexia nervosa.
11. Name four ways in which bulimia nervosa can damage your body.

APPLYING YOUR LEARNING

12. Based on what you have covered in this lesson, describe on paper a plan you would use to make healthy food choices and increase physical activity over the next seven days. Include whether this plan would be used to lose, gain, or maintain weight.