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Finding Balance: Understanding How Calories Work

Researchers agree that the waistline of America is expanding primarily because we eat and drink more calories than we burn year after year¹. Over the last several decades, the American diet has expanded to include larger portion sizes and foods higher in calories². At the same time, Americans have also become less physically active in their day-to-day lives³. The typical American regularly consumes more calories than they burn during daily activities, and as a result, two-thirds of the adult American population are either overweight or obese^{4,5,6}. In addition, almost 35 percent of children in the United States between six and 19 years-old are overweight or obese⁷.

The International Food Information Council Foundation's *Food & Health Survey* continues to find that a majority of Americans are concerned about their weight. The survey participants report that the strategies they are using in an attempt to control their weight include changing the amount of food they eat, changing the type of foods they eat and engaging in more physical activity⁸. Still, research indicates that many consumers remain confused about the importance of calories in weight management and the overall impact of energy balance on achieving a healthy weight⁸.

The 2010 Dietary Guidelines Advisory Committee recommends reducing overall calorie intake and achieving and maintaining energy balance to reduce the incidence and prevalence of overweight and obesity in the United States⁹. The US Centers for Disease Control and Prevention and the World Health Organization also emphasize the importance of calories in addressing overweight and obesity. Both the CDC and WHO state that overweight and obesity result from an energy imbalance due to consuming too many calories and not getting enough physical activity^{10,11}. The American

Dietetic Association supports these weight management strategies and maintains the position that all foods can fit into a healthful



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eating style given appropriate portion sizes, inclusion of foods rich in vitamins, minerals and other nutrients as well as regular physical activity¹².

An active, healthful lifestyle is the result of making balanced food and physical activity choices. The information provided highlights how balancing calories consumed—the body's energy source—and calories burned can help Americans achieve a healthy weight and an overall active, healthful lifestyle.

All Calories Count

Everything we do requires energy, including standing, walking, running and just keeping our bodies warm, and we get this energy from the foods and beverages we eat and drink. All foods and beverages with the exception of water and zero-calorie foods and beverages, contain nutrients – carbohydrate, protein and fat – that can be broken down into the energy the body needs. Energy from nutrients is measured in calories. Foods and beverages have different amounts of calories because they contain different amounts of these nutrients. Carbohydrate and protein provide four calories in each gram, while fat provides more than twice as much per gram – nine calories. Alcohol, though not considered a necessary nutrient, also provides about seven calories per gram.

Our bodies need a certain amount of calories to complete day-to-day activities and exercise. Each person has unique calorie needs that depend on a number of factors, including height, weight, age, gender and activity level¹³. When we consume too many calories, the excess calories are stored as body fat. This can contribute to weight gain and ultimately, health issues.

In recent years, many popular diets have emphasized restricting the amount of fat, carbohydrate or protein consumed – instead of encouraging people to focus on total calories consumed. A recent study investigated the impact of various diets, each with different amounts of fat, protein and carbohydrate, on weight loss. The study showed that weight loss was similar for all participants who cut back their calorie intake overall, regardless of the type of diet¹⁴. The bottom line is that all calories count when it comes to energy balance and achieving a healthy weight¹⁰.

Energy Balance = Calorie Balance



Energy balance occurs when the amount of calories consumed or eaten from all foods and beverages equals the calories expended or burned. Awareness of calorie needs and awareness of the amount of calories burned during various activities are the first steps toward achieving energy balance and a healthy weight. When we tip the balance and eat and drink more calories than we burn, weight gain occurs. When we eat and drink fewer calories than we burn, weight loss is the result.

A scientific review found that energy output (burning calories) can be broken down into three parts: the resting metabolic rate, the energy used to digest food and the energy expended during physical activity¹⁵. The first two components are collectively referred to as “metabolism.” The last component can be broken down into day-to-day activities such as walking to the bus or train station, plus planned physical activities such as running, cycling or going to the gym. Unless we are elite athletes, we burn the most calories through our metabolism, but we have the most control over the amount of physical activity we complete throughout the day. All physical activity, such as standing, walking or running increases energy output. The time we spend being active and the intensity of the activity will affect how many calories we burn.

Some research has indicated there may be some differences among how individuals digest and metabolize certain foods, as well as how individuals are able to correct for energy or caloric imbalances¹⁶. However, in order to maintain a stable body weight, the evidence still points to the need for balancing calories and activity¹⁶. Each individual should consider both daily and planned physical activities in addition to overall food and beverage intake to determine his or her personal energy balance.

Researchers have also investigated whether exercise alone can help an individual manage his or her weight or if attention to nutrition content and calorie intake is a more important factor. Results from various studies have found that physical activity, when not in conjunction with calorie restriction, is typically not enough to prevent weight gain¹⁷. Our ability to control calorie intake and increase our physical activity are two essential parts of the energy balance equation – both are important in achieving a healthy weight and ultimately, improving our health.

Balancing Nutrient Needs with Calorie Needs

Every food and beverage contains a different combination of nutrients—carbohydrates, proteins, fats, vitamins, minerals, water and sometimes alcohol. Carbohydrates, proteins, fats and alcohol contribute calories that can be used to meet daily energy needs. The idea behind a healthful, balanced diet is to make food and beverage choices that provide the necessary variety of nutrients without exceeding the right amount of calories required for age, gender, body size and activity level.

The 2010 *Dietary Guidelines Advisory Committee Report* encourages Americans to eat foods rich in nutrients, especially those nutrients that many Americans do not get enough of such as calcium, vitamin D, fiber and potassium⁹. Foods packed with nutrients are often referred to as nutrient-rich or nutrient-dense, meaning they have a lot nutrients for the number of calories they contain. Some examples of nutrient-rich foods emphasized by *MyPyramid* include whole grains, fruits and vegetables, calcium-rich foods like low-fat dairy products and protein sources such as lean meats and fish, eggs, beans and nuts. Some foods and beverages also have added nutrients like vitamins, minerals or fiber to help us reach nutrient goals.

Make the most of your calories by choosing lower-calorie, nutrient-rich foods and beverages first. This approach does not suggest giving up or cutting anything out and allows more room for higher-calorie foods to be consumed within calorie recommendations. In fact, all foods and beverages can fit into a healthful, balanced diet as long as portion sizes are controlled and priority is given to meeting nutrient needs as well as getting regular physical activity.



Impact of Portion Size on Calorie Intake

Calorie intake is directly related to the amount of a food or beverage we consume. The amount of a certain food or beverage we eat or drink at one time is called the portion size. It can often be difficult to estimate the appropriate portion size of foods we consume, particularly when we do not cook or prepare the food ourselves.

Taste, hunger, and personal beliefs about the healthfulness of a food or beverage have been shown to influence how much children and adults choose to eat^{18,19}. For example, research shows that the hungrier one is, the larger the portion size consumed^{19,20}. Continually eating larger portion sizes will increase the amount of calories consumed and can lead to weight gain over time.



Portion sizes have been steadily increasing over several decades²¹. This may be connected to the American desire to get more for our money²². Growing portion sizes can lead us to perceive the larger portion sizes as the appropriate amount of food to consume at one time.

Food package sizes have increased over the years and may also influence how much we eat^{23,24}. Many people believe that one package equals one serving, but this is not always the case^{25,26}. We may be more likely to consume a larger amount of a food or beverage from a larger package than a smaller one. Portion-controlled packages may help consumers become more aware of portion size. Research with adults found that after eating portion-controlled snacks for a week, participants chose more appropriate portion sizes when presented with standard-sized packages²⁷.

Habits and behaviors also have an important influence on the portion sizes people choose²². For example, research has found that people serve and eat more food from larger bowls and plates than smaller ones²⁸. We tend to use the size of plates, bowls and utensils to judge the appropriateness of portion size, so serving and eating from smaller plates and bowls can help us eat smaller amounts^{23,28}. We also tend to eat and drink more of any type of food or beverage when it is available and in close proximity to us – the more effort involved, the less we eat or drink²⁸. These changes in our habits and behaviors may be important tools to consider when managing weight.



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Other Factors Affecting Calorie Intake

In addition to how much we eat, when and how often we eat may influence our weight^{2,29}. Skipping breakfast has been associated with an increased risk of obesity². A review of factors that influence energy intake found that unplanned snacking increases overall calorie intake². Alternately, an increased number of planned eating events may result in fewer calories consumed and a reduced risk of obesity². This may occur because people who are conscious of how much they eat are typically those who plan their meals and snack times²⁹. When all meals and snacks are planned, overall calorie intake is more thoughtfully balanced among eating events².



The key to any physical activity routine is to develop sustained habits for a healthier lifestyle.

Importance of Physical Activity

Physical activity is an important component of health and weight management³⁰. According to research, certain fat cells can increase in size and number if we are not active enough³¹. Physical activity also provides other health benefits, beyond weight management, such as reduced incidence of depression; improved cardiorespiratory and muscular fitness and lower risk of heart disease, stroke, Type 2 diabetes, high blood pressure and several types of cancers³².

Due in part to advances in technology, such as dishwashers, riding lawnmowers and remote controls, Americans do not engage in the same day-to-day activities as we did in the past. Americans also take part in more sedentary activities such as watching television or using computers than in previous years³³. Data suggest that many adolescents spend as much as six hours per day in “screen time”³⁴. These societal changes have led us to a point where the amount of daily physical activity we engage in may not be sufficient to manage weight or reduce our risk for disease³⁵. To address this trend, the federal government released a set of Physical Activity Guidelines for Americans in 2008³².

The *Physical Activity Guidelines* recommend healthy adults get two hours and 30 minutes a week of moderate-intensity aerobic physical activity or one hour and 15 minutes of vigorous-intensity aerobic physical activity or a combination of moderate- and vigorous-intensity activity³². Moderate-intensity aerobic activity can include gardening, walking or ballroom dancing, while examples of vigorous-intensity aerobic activity include jogging, swimming and bicycling³². The Guidelines also recommend resistance training or muscle-strengthening activities at least twice per week for all major muscle groups (weight lifting, push-ups and pull-ups, etc.)³². Strength training increases our ability to perform other daily tasks, which may help to improve overall quality of life and promote bone health³⁶. People with chronic diseases like diabetes or heart disease or who have previously been obese may require more physical activity in order to reap the same benefits of lower disease risk³².

Impact of Physical Activity on Weight

A review of calorie expenditure, physical activity and body weight control found that as the body adapts to regular exercise, our ability to use fat stores for energy increases, leading to a reduction in weight³⁷. The effect of exercise on appetite is not as clear. Some research suggests that physical activity also may increase the levels of hormones in the blood that promote fullness, which may lead to decreased appetite³⁸. For example, low levels of the hormone dopamine have been shown to increase the desire to eat. After physical activity, dopamine level increases, reducing our desire to eat³⁹. However, other research suggests that exercise may increase appetite and that the effects of exercise on appetite can be highly variable for an individual⁴⁰.

The American College of Sports Medicine and the *Physical Activity Guidelines* suggest making small changes when it comes to introducing physical activity into our daily routine^{32,41}. The key to any physical activity routine is to develop sustained habits for a healthier lifestyle. As the *Physical Activity Guidelines* suggest, you should be active *your way*³².





Achieving Energy Balance

Body weight is a balancing act between how much we eat and drink, and how often and how much we move. To maintain weight, we need to take in the same amount of calories that our bodies need and use each day. When we eat and/or drink too many calories, our bodies will be out of balance, and weight gain is likely to occur over time. When we consistently eat and/or drink fewer calories than we need, we use up excess body fat and lose weight.

Achieving energy balance requires us to burn the same number of calories as we eat and drink. We can fit our favorite foods and beverages into our diet while getting the optimal amount of nutrients from our calories by choosing nutrient-rich foods most often and controlling our portion sizes. We can also control how much we move; small steps like taking the stairs instead of an escalator or parking further away in the parking lot can add up to more calories burned throughout the day. When we engage in more vigorous activities like dancing, running or bicycling, we burn even more calories. By balancing the amount of calories consumed and burned, we can achieve a healthy weight and improved health.

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Steps for Achieving Energy Balance

Here are some steps to find your balance between what you eat and how often you move.

STEP 1: Know your number.

Learning how many calories you should consume in a day is a critical first step in managing your weight. It's easy to find out how many calories you need each day. There are many websites that provide energy calculators that can tell you how many calories you need based on a few key pieces of information. MyPyramid.gov is a great place to start!

STEP 2: Keep a journal to track all the calories you eat and drink as well as how much you move.

Research has found successful weight "losers" tend to regularly track their weight, food intake and activity. Regularly write down what and how much you eat and drink and how much you move. Look for information about calories, serving sizes and nutrients on the Nutrition Facts panel on foods and beverages. Many restaurants have similar information available upon request or online.

Aim to journal these items for at least three days; the longer you journal, the more information you will give yourself. At the end of each day, add up the number of calories you ate and drank and the number you burned. Are the numbers higher or lower than your needs?

There are also websites and smart phone apps that count your calories for you as you type in what you eat and drink and record your activity. The USDA's MyPyramid Tracker helps you keep track of the calories you eat and drink and how many calories you use or burn through physical activity.

STEP 3: If necessary, find ways to cut calories or adjust your level of physical activity.

Think of your body as a gas tank. When you consistently overfill your tank and eat and drink more calories than you burn through physical activity, you will be out of balance and you will gain weight. If you are trying to maintain your weight, then you want to take in the same amount of calories that your body burns each day. If you want to lose weight, then you should consistently eat and drink fewer calories than your body needs each day and use up stored calories by moving more.

For every one pound of weight you want to lose per week, you need to cut back what you eat or increase physical activity by approximately 500 calories each day. You can do this by consuming smaller portions of higher-calorie foods and beverages or by switching to lower-calorie or calorie-free versions. You also can participate in various forms of physical activities that burn extra calories each day. But remember: people who do physical activity *and* control their diet have the most success in managing their weight.

STEP 4: Re-evaluate your calorie needs and consider further changes to ensure continued success

Once you have achieved a healthy weight, or even while on your weight loss journey, it is important to be proud of your success and improved health and take time to re-energize. As you lose weight, your calorie needs may decrease, so return to Steps 1-3 to help you along your quest for achieving and maintaining balance. You will find as you continue to put your body in balance with your activities and food intake, healthful behaviors will become easier and will lead you to develop new healthful habits.

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