

What is Energy Balance?

Energy is another word for "calories." What you eat and drink is ENERGY IN. What you burn through physical activity is ENERGY OUT.

You burn a certain number of calories just by breathing and digesting. A big person burns more calories every day than a small person. You also burn a certain number of calories through your daily routine. For example, children burn calories being students, and adults burn calories being office workers, kindergarten teachers, construction workers, stay-at-home parents, and everything in between.

However, it is important to understand that people with physically active lifestyles burn more calories than those with sedentary or not-as-active lifestyles.

The same amount of **ENERGY IN** and **ENERGY OUT** over time
= **weight stays the same**

More **IN** than **OUT** over time = **weight gain**

More **OUT** than **IN** over time = **weight loss**

Your ENERGY IN and OUT don't have to balance exactly every day. It's the balance over time that determines whether you can maintain a healthy weight in the long run. And, because children need energy to grow properly, energy balance in children happens when the amount of ENERGY IN and ENERGY OUT supports natural growth without promoting excess weight gain.

To give you a sense of how many calories (ENERGY IN), you and your family need, see the Estimated Calorie Requirement chart. This chart shows the calorie level health experts recommend by gender and age level, also factoring in a person's overall level of physical activity.

Estimated Calorie Requirements

This chart presents estimated amounts of calories needed to maintain energy balance for various gender and age groups at three different levels of physical activity. The estimates are rounded to the nearest 200 calories and were determined using an equation from the Institute of Medicine (IOM).

Estimated Calorie Requirements (in Kilocalories) for Each Gender and Age Group at Three Levels of Physical Activity^a				
Gender	Age (years)	Activity Level^{b,c,d}		
		Sedentary^b	Moderately Active^c	Active^d
Child	2-3	1,000	1,000-1,400 ^e	1,000-1,400 ^e
Female	4-8	1,200	1,400-1,600	1,400-1,800
	9-13	1,600	1,600-2,000	1,800-2,200
	14-18	1,800	2,000	2,400
	19-30	2,000	2,000-2,200	2,400
	31-50	1,800	2,000	2,200
	51+	1,600	1,800	2,000-2,200
Male	4-8	1,400	1,400-1,600	1,600-2,000
	9-13	1,800	1,800-2,200	2,000-2,600
	14-18	2,200	2,400-2,800	2,800-3,200
	19-30	2,400	2,600-2,800	3,000
	31-50	2,200	2,400-2,600	2,800-3,000
	51+	2,000	2,200-2,400	2,400-2,800

Source: HHS/USDA Dietary Guidelines for Americans, 2005

a These levels are based on Estimated Energy Requirements (EER) from the IOM Dietary Reference Intakes macronutrients report, 2002, calculated by gender, age, and activity level for reference-sized individuals. "Reference size," as determined by IOM, is based on median height and weight for ages up to age 18 years of age and median height and weight for that height to give a BMI of 21.5 for adult females and 22.5 for adult males.

b Sedentary means a lifestyle that includes only the light physical activity associated with typical day-to-day life.

c Moderately active means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

d Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

e The calorie ranges shown are to accommodate needs of different ages within the group. For children and adolescents, more calories are needed at older ages. For adults, fewer calories are needed at older ages.

Energy Balance in Real Life

Here's an example of how you can balance your "lifestyle budget." If you know you're going to a party and may eat more high-calorie foods than you normally would, then eat fewer calories for a few days beforehand so it balances out. Or, you can increase your physical activity for the few days before or after the party so you can burn off the extra energy.

The same idea applies to your children. If they will be going to a birthday party where you know they will eat cake and ice cream or other foods high in fat and added sugar, help them balance their calories the day before and after the party by providing opportunities for them to be more physically active. Here's another way of looking at energy balance in real life. Eating just 150 calories more a day than you burn in activity can lead to a gain of 5 pounds over 6 months, or 10 pounds a year. If you don't want this to happen, or you want to lose the extra weight, you can either reduce your ENERGY IN or increase your ENERGY OUT. Doing both is the best idea.

For example, to reduce ENERGY IN by 150 calories (for a 150 pound person):

- Drink water instead of a 12-ounce regular soda
- Downsize a medium French fries to a small, or substitute a salad with dressing on the side
- Eat an egg-white omelet (w/ three eggs), instead of whole eggs
- Use tuna canned in water (6-ounce can), instead of oil

To increase ENERGY OUT by 150 calories:

- Shoot hoops for 30 minutes
- Walk two miles in 30 minutes
- Do yard work (gardening, raking leaves, etc.) for 30 minutes
- Go for a 30 minute bike ride
- Dance with your family or friends for 30 minutes

[Read more tips on energy balance](#) in the Live It section.

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