

Energy, Exercise, and Food: An Overview

Childhood obesity has more than tripled in the past 30 years. The prevalence of obesity among children aged 6 to 11 years increased from 6.5% in 1980 to 19.6% in 2008. The prevalence of obesity among adolescents aged 12 to 19 years increased from 5.0% to 18.1%. We spend \$150 billion every year to treat obesity-related conditions, and that number is growing. For the first time in American history, our children's life expectancy may be shorter than their parents'.

It is increasingly important that parents, educators, and other members of children's lives find ways to encourage increased physical activity and healthy eating habits in children. This section provides some base information on how our bodies use energy and the different types and quantities of energy provided by various foods.

What is Energy Balance?

Energy is another word for "calories." Energy balance is the balance of calories you consume through eating and drinking compared to the calories you burn through physical activity. What you eat and drink is ENERGY IN. What you burn through physical activity is ENERGY OUT.

Maintaining a steady energy balance means having equal amounts of ENERGY IN (calories consumed) and ENERGY OUT (calories burned), and will lead to a steady body weight over time. If you bring more ENERGY IN, than OUT over time, you will gain weight. If you have more OUT than IN, you will lose weight.

Your ENERGY IN and OUT don't have to balance every day. It's having a balance **over time** that will help you stay at a healthy weight for the long term. Children need to balance their energy too, but they're also growing and that should be considered as well. Energy balance in children happens when the amount of ENERGY IN and ENERGY OUT supports natural growth without promoting excess weight gain. Examine the Estimated Calorie Requirement chart to get an idea of how many calories (ENERGY IN) that you and your family need on a daily basis.

An important part of maintaining energy balance is the amount of ENERGY OUT (physical activity) that you do. People who are **physically active** burn **more** calories than those who are not as physically active. You burn a certain number of calories just by breathing air and digesting food. You also burn a certain number of calories through your daily routine. For example, children burn calories just being students—walking to their lockers, carrying books, etc.—and adults burn calories walking to the bus stop, going shopping, etc.

Another aspect of energy balance is recognizing the amount of energy (calories) different foods and drinks bring with them. Foods and drinks that have high levels of fat or added sugar contain more calories than other foods, and so will take longer to "burn" off. Those foods may also lack the essential nutrients and vitamins that our bodies need.

Energy Balance in Real Life

Think of your energy balance as your "lifestyle budget." Consider your energy intake over an extended period of time, just like you would your monetary budget, and adjust your eating habits and activity levels to maintain a steady level over that period.

For example, if you know you and your family will be going to a party and may eat more high-calorie foods than normal, then you may wish to eat fewer calories for a few days before so your intake balances out. Or, you can increase your physical activity level for the few days before or after the party, so that you can burn off the extra energy (calories) you consume.

The same applies to your kids. If they'll be going to a birthday party and eating cake and ice cream—or other foods high in fat and added sugar—help them balance their calories the day before and/or after by providing ways for them to be more physically active.

Here's another way of looking at energy balance in real life: Eating just **150 calories more than you burn** every day can lead to an **extra 5 pounds** over **6 months**. That's a **gain of 10 pounds a year**, for something as small as a few Oreos or a can of soda. Reducing your weight is as simple as decreasing your ENERGY IN or increasing your ENERGY OUT. Doing both simultaneously is the best way to achieve and maintain a healthy body weight.

Ways to cut 150 calories	Ways to burn 150 calories (30 mins. for a 150 pound person)
Drink water instead of a 12-ounce regular soda	Shoot hoops
Order a small serving of French Fries instead of a medium, or order a salad with dressing on the side instead	Walk two miles
Eat an egg-white omelet (with three eggs), instead of whole eggs	Do yard work (gardening, raking leaves, etc.)
Use tuna canned in water (6-oz can), instead of oil	Go for a bike ride
	Dance with your family or friends

Obesity Facts

(From the SmallStep campaign of the U.S. Department of Health and Human Services)

- 2 out of every 3 Americans are overweight or obese, with a Body Mass Index over 25. (See below for more information on BMI.)
- In order to lose weight, you have to burn more calories than you consume.
- Even small changes in your life will add up to big results.
- **Eat A Healthy Diet.** Take the time to learn how eating right is key to a healthy lifestyle.
- **Get Active.** Be active at least 5 times a week, for 30 minutes or more.
- **Avoid Harmful Substances.** Don't use tobacco or illegal drugs.

Body Mass Index

Body Mass Index (BMI) is a number calculated from a person's weight and height. BMI provides a reliable indicator of the amount of fat in your body for most people and is used to screen for weight categories that may lead to health problems.

Calculate Your BMI

There are many BMI calculators available online, or you can visit a physician to have them help you calculate your BMI. If you are using an online calculator, be sure to use one specifically designed for your age. BMIs for those under 19 are calculated differently than for those over 19.

Visit the links below, or the CDC's Healthy Living website (<http://www.cdc.gov/HealthyLiving/>), for BMI calculators and information and tips on eating right, maintaining a physically active lifestyle, and living healthily.

Adult BMI Calculator:

http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html

Child and Teen BMI Calculator:

<http://apps.nccd.cdc.gov/dnpabmi/>

Estimated Calorie Requirements for Gender and Age Groups at Three Levels of Physical Activity

This calorie requirement chart presents estimated amounts of calories needed to maintain energy balance (and a healthy body weight) 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).

Gender	Age (years)	Activity Level		
		Sedentary	Moderately Active	Active
Child	2-3	1,000 calories	1,000-1,400 calories	1,000 - 1,400 calories
Female	4-8	1,200	1,400-1,600	1,400-1,800
Female	9-13	1,600	1,600-2,000	1,800-2,000
Female	14-18	1,800	2,000	2,400
Female	19-30	2,000	2,000-2,200	2,400
Female	31-50	1,800	2,000	2,200
Female	51+	1,600	1,800	2,000-2,200
Male	4-8	1,400	1,400-1,600	1,600-2,000
Male	9-13	1,800	1,800-2,200	2,000-2,600
Male	14-18	2,200	2,400-2,800	2,800-3,200
Male	19-30	2,400	2,600-2,800	3,000
Male	31-50	2,200	2,400-2,600	2,800-3,000
Male	51+	2,000	2,200-2,400	2,400-2,800

Sedentary Lifestyle: Includes only light physical activity associated with typical day-to-day life.

Moderately Active Lifestyle: Includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3-4 mph, in addition to the light physical activity associated with typical day-to-day life.

Active Lifestyle: Includes physical activity equivalent to walking more than 3 miles per day at 3-4 mph, in addition to the light physical activity associated with day-to-day life.

Source: We Can! (Ways to Enhance Children's Activity & Nutrition) program of the U.S. Department of Health and Human Services

Calories Burned During Outside Recreation

Activity (1 Hour)	Average calories burned by body weight		
	130 lbs	155 lbs	190 lbs
Archery (non-hunting)	207	246	302
Backpacking, general	413	493	604
Bicycling, <10mph, leisure	236	281	345
Bicycling, >20mph, racing	944	1126	1380
Bicycling, 10-11.9mph, light effort	354	422	518
Bicycling, 12-13.9mph, moderate effort	472	563	690
Bicycling, 14-15.9mph, vigorous effort	590	704	863
Bicycling, 16-19mph, very fast, racing	708	844	1035
Bicycling, BMX or mountain	502	598	733
Canoeing, on camping trip	236	281	345
Canoeing, rowing, moderate effort	413	493	604
Fishing from boat, sitting	148	176	216
Fishing from river bank, standing	207	246	302
Fishing in stream, in waders	354	422	518
Fishing, general	236	281	345
Fishing, ice, sitting	118	141	173
Hiking, cross country	354	422	518
Hunting, general	295	352	431
Kayaking	295	352	431
Paddleboat	236	281	345
Rock climbing, ascending rock	649	774	949
Rock climbing, rappelling	472	563	690
Skating, ice, general	413	493	604
Skiing, cross-country, >8.0 mph, racing	826	985	1208
Skiing, cross-country, moderate effort	472	563	690
Skiing, cross-country, slow or light effort	413	493	604
Skiing, cross-country, uphill, maximum effort	974	1161	1423
Skiing, cross-country, vigorous effort	531	633	776
Sledding, tobogganing, bobsledding, luge	413	493	604
Snow shoeing	472	563	690
Swimming, leisurely, general	354	422	518
Walking, 2.0 mph, slow pace	148	176	216
Walking, 3.0 mph, mod pace, walking dog	207	246	302
Walking, 3.5 mph, uphill	354	422	518
Walking, 4.0 mph, very brisk pace	236	281	345
Whitewater rafting, kayaking, or canoeing	295	352	431

Resources:

- http://www.cancer.org/docroot/PED/content/PED_6_1x_Exercise_Counts.asp
- http://www.sheerbalance.com/calorie_exercise.html
- <http://www.healthstatus.com/calculate/cbc>
- <http://www.nutristrategy.com/activitylist4.htm>

Fast Food Calories: What They Cost and How to Lose Them

How many minutes of physical activity will it take to burn off that shake and fries?

All figures approximate and based on a 150-pound woman. If you weigh more, you will burn more calories. If you weigh less, you will burn fewer.

Fast Foods

Physical Activity	Cheeseburger and Fries	Hamburger and Fries (Large)	Fish and Chips	Chicken and Fries	Pancakes (3) with butter & syrup	Pizza (12" Cheese)	Pizza (12" Pepperoni)	Fried Sausage (1)	Hot Dog (Regular)	Chicken Nuggets (6)
Aerobics Active	88	114	74	102	67	117	143	13	31	39
Dancing Energetic	102	132	85	118	78	135	165	15	36	45
Jogging 5 mph	81	105	68	95	62	108	132	12	28	36
Swimming Steadily	81	105	68	95	62	108	132	12	28	36
Walking 3mph	136	176	114	158	104	180	220	20	48	60

Fast Food Extras and Desserts

Physical Activity	Large Fries	Onion Rings (8)	Hash Browns (1/2 cup)	Garlic Bread (1 Slice)	Ranch Dressing (1 packet)	Apple Pie	Brownie (1)	Hot Fudge Sundae	Strawberry Shake	Ice cream Cone (Large)
Aerobics Active	47	23	19.5	14	30	34	32	38	47	44
Dancing Energetic	54	26	22	16	35	39	37	43	54	51
Jogging 5mph	43	21	18	13	27	31	29	35	43	41
Swimming Steadily	43	21	18	13	27	31	29	35	43	41
Walking 3mph	72	35	30	22	46	52	49	58	72	68

Fruit and Vegetables

Physical Activity	Banana (Medium)	Orange (Medium)	Strawberries (4oz)	Raisins (4oz)	Apple (Medium)	Carrot (4oz)	Potato (4oz)	Spinach (1 cup)	Potato salad (1 cup)	Squash (1 cup)
Aerobics Active	10	6.5	3	32	8	2.5	10	1.25	47	13
Dancing Energetic	12	7.5	4	37	9	3	12	1.5	54	15
Jogging 5mph	9.5	6	3	29	7	2.5	9.5	1.25	43	12
Swimming Steadily	9.5	6	3	29	7	2.5	9.5	1.25	43	12
Walking 3mph	16	10	5	49	12	4	16	2	72	20

Beef and Cheese

All meat: 3 oz. in weight. All cheese: 1 oz. in weight.

Physical Activity	T-Bone Steak	Ground Beef	Corned Beef	Rib Roast	Round Top (Lean)	Cheddar	Cottage	Mozzarella	Parmesan	Ricotta
Aerobics Active	36	29	41	43	20	14	2.5	10	14	7
Dancing Energetic	41	34	47	49	23	16	3	12	16	8
Jogging 5mph	33	27	38	39	18	13	2	9.5	13	6.5
Swimming Steadily	33	27	38	39	18	13	2	9.5	13	6.5
Walking 3mph	55	45	63	66	31	22	4	16	22	11

Source: Anne Collins Weight Management Program: <http://www.annecollins.com/exercise-calories/>