

Do You Know the Health Risks of Being Overweight?



National Institute of Diabetes and
Digestive and Kidney Diseases

NATIONAL INSTITUTES OF HEALTH

WIN *Weight-control Information Network*

What are the risks to my health from being overweight?

Weighing too much may increase your risk for developing many health problems. If you are overweight or obese, you may be at risk for:

- type 2 diabetes
- coronary heart disease and stroke
- metabolic syndrome
- certain types of cancer
- sleep apnea
- osteoarthritis
- gallbladder disease
- fatty liver disease
- pregnancy complications

You may be able to lower your health risks by losing weight, doing regular physical activity, and eating healthfully.

Body Mass Index

Body mass index (BMI) is a tool that is often used to determine whether a person's health is at risk due to his or her weight. BMI is a ratio of your weight to your height. A BMI of 18.5 to 24.9 is considered healthy; a BMI of 25 to 29.9 is considered overweight; and a BMI of 30 or more is considered obese.

You can use the table on the following page to determine your BMI. Find your height in the left-hand column labeled "Height." Move across to your weight. The number at the top of the column is the BMI for that height and weight. Pounds have been rounded off.

If you are overweight, you are more likely to develop certain health problems. You may be able to improve your health by losing as little as 10 to 20 pounds.

Body Mass Index Table

	NORMAL						OVERWEIGHT					OBESE									EXTREME OBESITY			
BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Height (Feet-Inches)	Weight (Pounds)																							
4' 10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201
4' 11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208
5' 00"	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215
5' 01"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222
5' 02"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229
5' 03"	107	112	118	124	130	135	141	146	152	158	163	169	174	180	186	191	197	203	208	214	220	225	231	237
5' 04"	110	116	122	128	134	140	145	151	157	163	169	175	180	186	191	197	204	209	215	221	227	232	238	244
5' 05"	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252
5' 06"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260
5' 07"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268
5' 08"	125	131	138	144	151	158	164	171	177	184	190	197	204	210	216	223	230	236	243	249	256	262	269	276
5' 09"	128	135	142	149	155	162	169	176	182	189	196	203	210	216	223	230	236	243	250	257	263	270	277	284
5' 10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292
5' 11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301
6' 00"	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309
6' 01"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	275	280	288	295	302	310	318
6' 02"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326
6' 03"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335
6' 04"	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344

Adapted from: George Bray, Pennington Biomedical Research Center; *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report*, National Institutes of Health, National Heart, Lung, and Blood Institute, September 1998.

Waist Circumference

Another way to determine if your weight is placing your health at risk is to measure your waist. Waist measurement does not determine if you are overweight, but it does indicate if you have excess fat in your abdomen. This is important because extra fat around your waist may increase health risks even more than fat elsewhere on your body.

Women with a waist measurement of more than 35 inches and men with a waist measurement of more than 40 inches may have an increased risk for obesity-related diseases.

Type 2 Diabetes

What is it?

Type 2 diabetes is a disease in which blood sugar levels are above normal. High blood sugar is a major cause of coronary heart disease, kidney disease, stroke, amputation, and blindness. In 2002, diabetes was the sixth leading cause of death in the United States.

Type 2 diabetes is the most common type of diabetes in the United States. This form of diabetes is most often associated with old age, obesity, family history of diabetes, previous history of gestational diabetes, and physical inactivity. The disease is more common among certain ethnic populations.

How is it linked to overweight?

More than 85 percent of people with type 2 diabetes are overweight. It is not known exactly why people who are overweight are more likely to develop this disease. It may be that being overweight causes cells to change, making them resistant to the hormone insulin. Insulin carries sugar from blood to the cells, where it is used for energy. When a person is insulin resistant, blood sugar cannot be taken up by the cells, resulting in high blood sugar. In addition, the cells that produce insulin must work extra hard to try to keep blood sugar normal. This may cause these cells to gradually fail.

What can weight loss do?

You may lower your risk for developing type 2 diabetes by losing weight and increasing the amount of physical activity you do. If you have type 2 diabetes, losing weight and becoming more physically active can help you control your blood sugar levels and prevent or delay complications. Losing weight and exercising more may also allow you to reduce the amount of diabetes medication you take. The Diabetes Prevention Program, a large clinical study sponsored by the National Institutes of Health, found that losing just 5 to 7 percent of your body weight and doing moderate-intensity exercise for 30 minutes a day, 5 days a week, may prevent or delay the onset of type 2 diabetes. For more information about the

Diabetes Prevention Program, visit www.diabetes.niddk.nih.gov/dm/pubs/preventionprogram/index.htm.

Coronary Heart Disease and Stroke

What are they?

Coronary heart disease means that the heart and circulation (blood flow) are not functioning normally. Often, the arteries have become hardened and narrowed. If you have coronary heart disease, you may suffer from a heart attack, congestive heart failure, sudden cardiac death, angina (chest pain), or abnormal heart rhythm. In a heart attack, the flow of blood and oxygen to the heart is disrupted, damaging portions of the heart muscle. During a stroke, blood and oxygen do not flow normally to the brain, possibly causing paralysis or death. Coronary heart disease is the leading cause of death in the United States, and stroke is the third leading cause.

How are they linked to overweight?

People who are overweight are more likely to develop high blood pressure, high levels of triglycerides (blood fats) and LDL cholesterol (a fat-like substance often called “bad cholesterol”), and low levels of HDL cholesterol (“good cholesterol”). These are all risk factors for heart disease and stroke. In addition, excess body fat—especially abdominal fat—may produce substances that cause inflammation. Inflammation in blood vessels and throughout the body may raise heart disease risk.

What can weight loss do?

Losing 5 to 10 percent of your weight can lower your chances for developing coronary heart disease or having a stroke. If you weigh 200 pounds, this means losing as little as 10 pounds. Weight loss may improve blood pressure, triglyceride, and cholesterol levels; improve heart function and blood flow; and decrease inflammation throughout the body.

Metabolic Syndrome

What is it?

The metabolic syndrome is a group of obesity-related risk factors for coronary heart disease and diabetes. A person has the metabolic syndrome if he or she has three or more of the following risk factors:

- **A large waistline.** For men, this means a waist measurement of 40 inches or more. For women, it means a waist measurement of 35 inches or more.^[1]
- **High triglycerides** or taking medication to treat high triglycerides. A triglyceride level of 150 mg/dL or higher is considered high.^[1]
- **Low levels of HDL (“good”) cholesterol** or taking medications to treat low HDL. For men, low HDL cholesterol is below 40 mg/dL. For women, it is below 50 mg/dL.^[1]
- **High blood pressure** or taking medications to treat high blood pressure. High blood pressure is 130 mm Hg or higher for systolic blood pressure (the top number) or 85 mm Hg or higher for diastolic blood pressure (the bottom number).^[1]
- **High fasting blood glucose (sugar)** or taking medications to treat high blood sugar. This means a fasting blood sugar of 100 mg/dL or higher.^[1]

A person with metabolic syndrome has approximately twice the risk for coronary heart disease and five times the risk for type 2 diabetes.^[1] It is estimated that 27 percent of American adults have the metabolic syndrome.^[2]

How is it linked to overweight?

The metabolic syndrome is strongly linked to obesity, especially abdominal obesity. Other risk factors are physical inactivity, insulin resistance, genetics, and old age.

Obesity is a risk factor for the metabolic syndrome because it raises blood pressure and triglycerides, lowers good cholesterol, and contributes to insulin resistance. Excess fat around the abdomen carries even higher risks.

What can weight loss do?

It may be possible to prevent the metabolic syndrome with weight management and physical activity. For patients who already have the syndrome, losing weight and being physically active may help prevent or delay the development of diabetes, coronary heart disease, or other complications.

Individuals who are overweight or obese and who have the metabolic syndrome should aim to lose 10 percent of their body weight and do at least 30 minutes of moderate-intensity physical activity every day. Quitting smoking, eating healthfully, and taking prescription medications for conditions such as high blood pressure or low HDL cholesterol may also be recommended. You can learn more about the metabolic syndrome from the National Heart, Lung, and Blood Institute at www.nhlbi.nih.gov.

Cancer

What is it?

Cancer occurs when cells in one part of the body, such as the colon, grow abnormally or out of control. The cancerous cells sometimes spread to other parts of the body, such as the liver. Cancer is the second leading cause of death in the United States.

How is it linked to overweight?

Being overweight may increase the risk of developing several types of cancer, including cancers of the colon, esophagus, and kidney. Overweight is also linked with uterine and postmenopausal breast cancer in women. Gaining weight during adult life increases the risk for several of these cancers, even if the weight gain does not result in overweight or obesity.

It is not known exactly how being overweight increases cancer risk. It may be that fat cells release hormones that affect cell growth, leading to cancer. Also, eating or physical activity habits that may lead to being overweight may also contribute to cancer risk.

What can weight loss do?

Avoiding weight gain may prevent a rise in cancer risk. Healthy eating and physical activity habits may lower cancer risk. Weight loss may also lower your risk, although studies have been inconclusive.

Sleep Apnea

What is it?

Sleep apnea is a condition in which a person stops breathing for short periods during the night. A person who has sleep apnea may suffer from daytime sleepiness, difficulty concentrating, and even heart failure.

How is it linked to overweight?

The risk for sleep apnea is higher for people who are overweight. A person who is overweight may have more fat stored around his or her neck. This may make the airway smaller. A smaller airway can make breathing difficult, loud (snoring), or stop altogether. In addition, fat stored in the neck and throughout the body may produce substances that cause inflammation. Inflammation in the neck is a risk factor for sleep apnea.

What can weight loss do?

Weight loss usually improves sleep apnea. Weight loss may help to decrease neck size and lessen inflammation.

Osteoarthritis

What is it?

Osteoarthritis is a common joint disorder that causes the joint bone and cartilage (tissue that protects joints) to wear away. Osteoarthritis most often affects the joints of the knees, hips, and lower back.

How is it linked to overweight?

Extra weight may place extra pressure on joints and cartilage, causing them to wear away. In addition, people with more body fat may have higher blood levels of substances that cause inflammation. Inflammation at the joints may raise the risk for osteoarthritis.

What can weight loss do?

Weight loss of at least 5 percent of your body weight may decrease stress on your knees, hips, and lower back, and lessen inflammation in your body. If you have osteoarthritis, losing weight may help improve your symptoms.

Gallbladder Disease

What is it?

Gallbladder disease includes gallstones and inflammation or infection of the gallbladder. Gallstones are clusters of solid material that form in the gallbladder. They are made mostly of cholesterol and can cause abdominal pain, especially after consuming fatty foods. The pain may be sharp or dull.

How is it linked to overweight?

People who are overweight have a higher risk for developing gallbladder disease. They may produce more cholesterol (a fat-like substance found in the body), a risk factor for gallstones. Also, people who are overweight may have an enlarged gallbladder, which may not work properly.

What can weight loss do?

Fast weight loss (more than 3 pounds per week) or large weight loss can actually increase your chance of developing gallstones. Modest, slow weight loss of about 1/2 to 2 pounds a week is less likely to cause gallstones. Achieving a healthy weight may lower your risk for developing gallstones.

Fatty Liver Disease

What is it?

Fatty liver disease occurs when fat builds up in the liver cells and causes injury and inflammation in the liver. It can sometimes lead to severe liver damage, cirrhosis (build-up of scar tissue that blocks proper blood flow in the liver), or even liver failure. Fatty liver disease is like alcoholic liver damage, but it is not caused by alcohol and can occur in people who drink little or no alcohol. You can learn more about fatty liver disease, also known as nonalcoholic steatohepatitis (NASH), from the National Digestive Diseases Information Clearinghouse at www.digestive.niddk.nih.gov/ddiseases/pubs/nash. The NASH Clinical Research Network, sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases, conducts clinical studies about prevention and treatment. For more information on the NASH Clinical Research Network, visit www.jhucct.com/nash.

How is it linked to overweight?

People who have diabetes or “pre-diabetes” (when blood sugar levels are higher than normal but not yet in the diabetic range) are more likely to have fatty liver disease than people without these conditions. People who are overweight are more likely to develop diabetes (see the “Type 2 Diabetes” section on page 3). It is not known why some people who are overweight or diabetic get fatty liver disease and others do not.

What can weight loss do?

Losing weight and being physically active can help you control your blood sugar levels. It can also reduce the build-up of fat in your liver and prevent further injury. People with fatty liver disease should avoid drinking alcohol.

Pregnancy Complications

What are they?

Overweight and obesity raise the risk of pregnancy complications for both mother and baby. Pregnant women who are overweight or obese may have an increased risk for:

- Gestational diabetes (high blood sugar during pregnancy).
- Pre-eclampsia (high blood pressure during pregnancy that can cause severe problems for both mother and baby if left untreated).
- Cesarean delivery or complications with cesarean delivery.

Babies of overweight or obese mothers have an increased risk of neural tube defects (defects of the brain and spinal cord), stillbirth, prematurity, and being large for gestational age.

How are they linked to overweight?

Pregnant women who are overweight are more likely to develop insulin resistance, high blood sugar, and high blood pressure. (Insulin resistance is when cells do not respond properly to the hormone insulin, which carries blood sugar to cells for energy. It may result in high levels of blood sugar.) Overweight also increases the risks associated with surgery and anesthesia, and severe obesity increases operative time and blood loss.

Some studies have shown that gaining excess weight during pregnancy—even without becoming obese—may increase risks. It is important to consult with your obstetrician or other health care provider about how much weight to gain during pregnancy.

What can weight loss do?

Women who are overweight or obese and who would like to become pregnant should speak with their health care provider about losing weight before becoming pregnant. Pre-pregnancy weight loss significantly reduces pregnancy complications. Pregnant women who are overweight or obese should speak with their health care provider about limiting gestational weight gain and being physically active during pregnancy.

Losing excess weight after delivery may help women reduce their health risks. If a woman developed gestational diabetes, losing weight will lower her risk of developing diabetes later in life.

How can I lower my health risks?

If you are overweight, losing as little as 5 percent of your body weight may lower your risk for several diseases, including coronary heart disease and type 2 diabetes. If you weigh 200 pounds, this means losing 10 pounds. Slow and steady weight loss of 1/2 to 2 pounds per week, and not more than 3 pounds per week, is the safest way to lose weight.

To lose weight and keep it off over time, try to make long-term changes in your eating and physical activity habits. Choose healthy foods, such as vegetables, fruits, whole grains, and low-fat meat and dairy products more often. Eat just enough food to satisfy you. Aim for at least 30 minutes of moderate-intensity physical activity, such as walking, on most or all days of the week. To lose weight, or to maintain weight loss, you will likely need to do more than 30 minutes of moderate physical activity daily.

To lose weight and keep it off over time, try to make long-term changes in your eating and physical activity habits.

- Choose healthy foods, such as vegetables, fruits, whole grains, and low-fat meat and dairy products more often.
- Aim for at least 30 minutes of moderate-intensity physical activity, such as walking, on most or all days of the week.

For more information, visit the websites below.

National Diabetes Information Clearinghouse

www.diabetes.niddk.nih.gov

National Heart, Lung, and Blood Institute

www.nhlbi.nih.gov

National Institute of Neurological Disorders and Stroke

www.ninds.nih.gov

National Cancer Institute

www.cancer.gov

Weight-control Information Network

www.win.niddk.nih.gov

Endnotes

[1] Grundy SM, Cleeman JI, Daniels SR, et al. Diagnosis and Management of the Metabolic Syndrome: An American Heart Association/National Heart, Lung, and Blood Institute Scientific Statement. *Circulation*. October 2005; 1129(17):2735-2752.

[2] Ford ED, Giles WH, Modkad AH. Increasing prevalence of the metabolic syndrome among U.S. adults. *Diabetes Care*. 2004;24(10):244-9.

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Publications produced by WIN are reviewed by both NIDDK scientists and outside experts. This publication was reviewed by Rachel Ballard-Barbash, M.D., M.P.H., Associate Director, Applied Research Program, National Cancer Institute; Robert Eckel, M.D., Professor of Medicine, Physiology, and Biophysics, University of Colorado Health Sciences Center; and Arthur Frank, M.D., Medical Director, The George Washington University Weight Management Program.

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