

A woman in a white lab coat is shown from the chest up, looking down at a patient's arm. She is holding a manual blood pressure cuff and a stethoscope. The patient's arm is resting on a table, and a blue blood pressure cuff is wrapped around it. The woman's expression is focused and professional. The background is a bright, out-of-focus clinical setting.

UNDER PRESSURE

How to
Manage the
Silent Killer

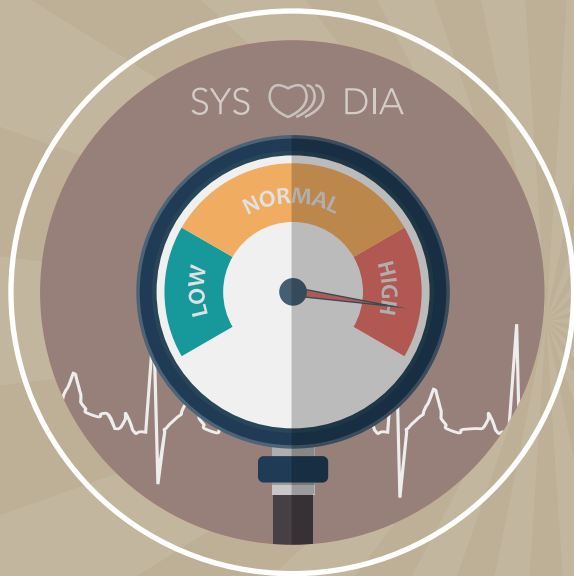
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#1

**What is
Blood Pressure?**

What is blood pressure?

When your heart beats, it pumps blood throughout your body. As the blood travels through the circulatory system, it exerts pressure against the arterial walls — this is blood pressure.

Your blood pressure rises with each heartbeat and falls when your heart relaxes between beats. Although it's normal for blood pressure to rise and fall depending on many factors, when at rest it should fall within an optimal, or healthy range.

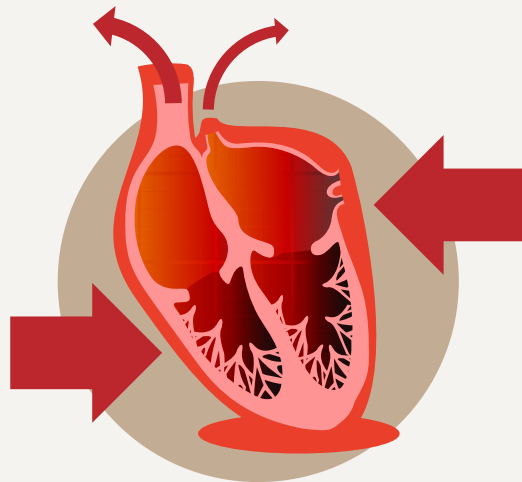
Blood pressure is typically recorded as two numbers, written as a ratio like this: 117/76 mmHg, which is read as "117 over 76 millimeters of mercury." The top number is called the systolic pressure while the bottom number is called the diastolic pressure.

Systolic Pressure Develops During Heartbeats

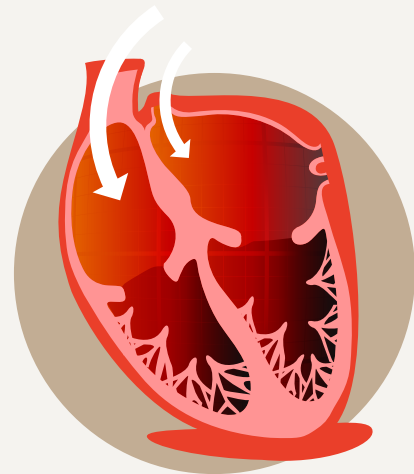
The top number, which is the higher of the two numbers, measures the pressure in the arteries when the heart beats (as the heart muscle contracts).

Diastolic Pressure Develops During Filling

The bottom number, which is the lower of the two numbers, measures the pressure in the arteries between heartbeats, when the heart muscle is resting between beats and refilling with blood.



Beat or contraction creates **systolic** pressure



In between beats, the heart fills with blood, creating the **diastolic** pressure

Typically, more doctors pay attention to the systolic pressure as a major risk factor for cardiovascular disease. In most people, systolic blood pressure rises steadily with age due to increasing stiffness of large arteries, long-term build-up of plaque, and increased incidence of cardiac and vascular disease.

The steady rise in blood pressure doesn't always come with signs and symptoms. This is why high blood pressure, or hypertension, is called the silent killer.

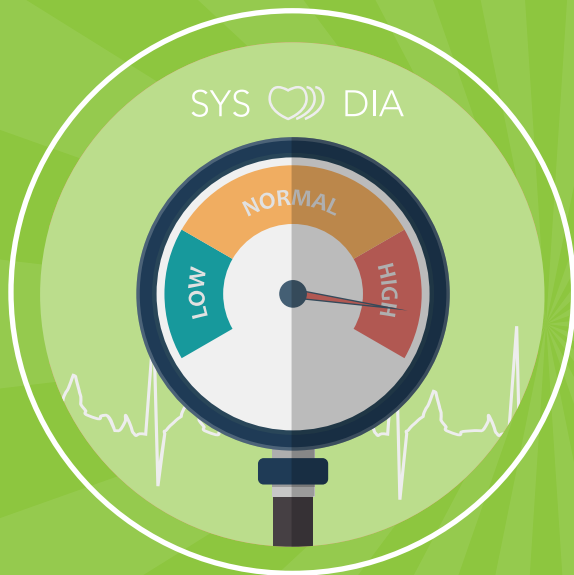
Blood Pressure Chart

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines, 2017:¹

Blood Pressure Category	Systolic mmHg (upper #)		Diastolic mmHg (lower #)
Normal	less than 120	and	less than 80
Elevated	120–129	or	less than 80
High Blood Pressure (Hypertension) Stage 1	130–139	or	80–89
High Blood Pressure (Hypertension) Stage 2	at least 140	or	at least 90
Hypertensive Crisis (Emergency care needed)	higher than 180	and/or	higher than 120

Although Life Extension® respects the American Heart Association, we believe that there's a more optimal blood pressure reading. Let's discuss this in the next section.





#2

**Optimal Blood
Pressure Reading**

Optimal Blood Pressure Reading

High blood pressure is a silent epidemic that threatens the lives of one in every three American adults. Since increased blood pressure is a major risk factor for heart disease, stroke, congestive heart failure, and kidney disease, it acts as an accomplice in millions of additional deaths each year.²

And this is exactly why it's important to identify the optimal blood pressure reading that will keep us safe.

But here's the problem: Mainstream medicine's definition of what constitutes acceptable blood pressure levels is far too high. Unfortunately, this leaves many of us at risk.

There's Risk with Lower Numbers

Researchers have found that blood pressure levels ranging from 120–129 for systolic pressure and 80–84 for diastolic pressure were associated with an 81% higher risk of cardiovascular disease compared to levels of less than 120/80 mmHg.³

If that's not scary enough, blood pressure levels of 130–139/85–89 mmHg were associated with a frightening 133% greater risk of cardiovascular disease compared to levels below 120/80.³

What this basically means is that millions of Americans are at risk of heart disease without even knowing it.



**Based on the research,
Life Extension recognizes that
for many individuals an optimal
blood pressure is 115/75 mmHg.**



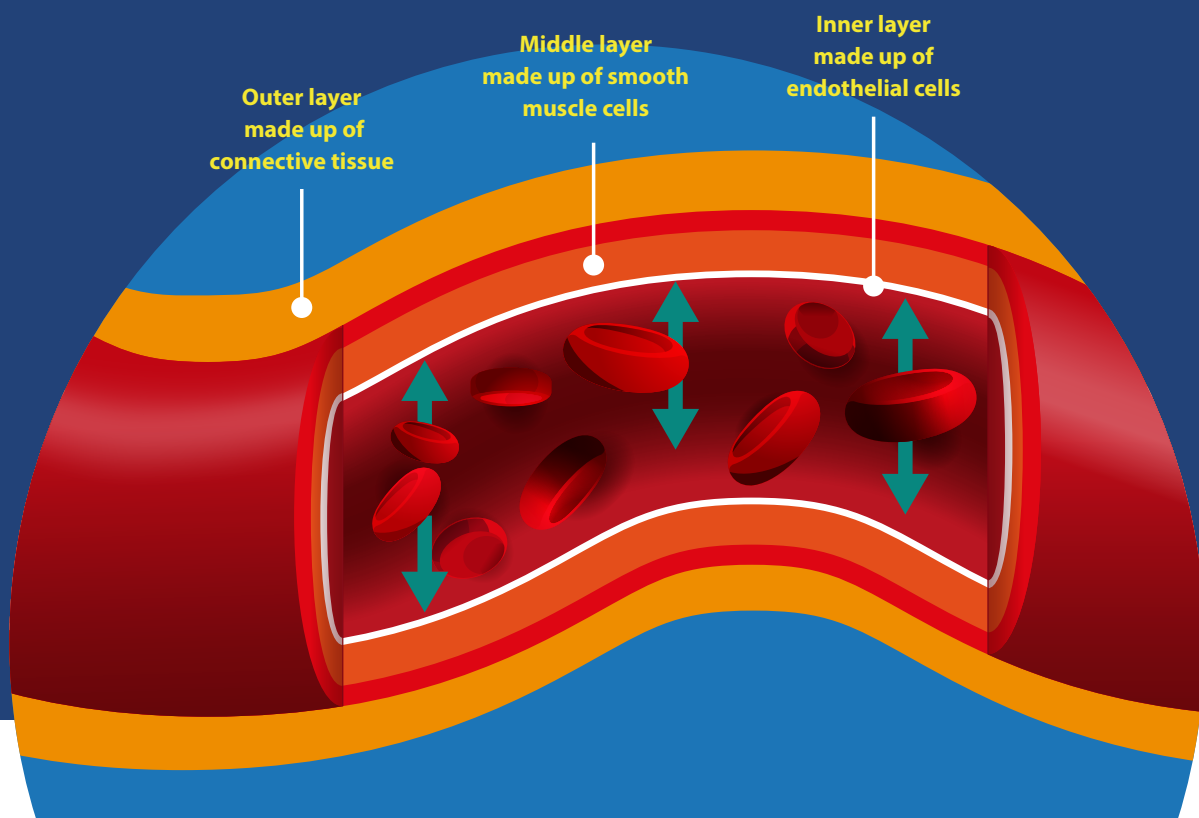
Hypertension and Endothelial Dysfunction: A Deadly, Dual Threat to Vascular Health

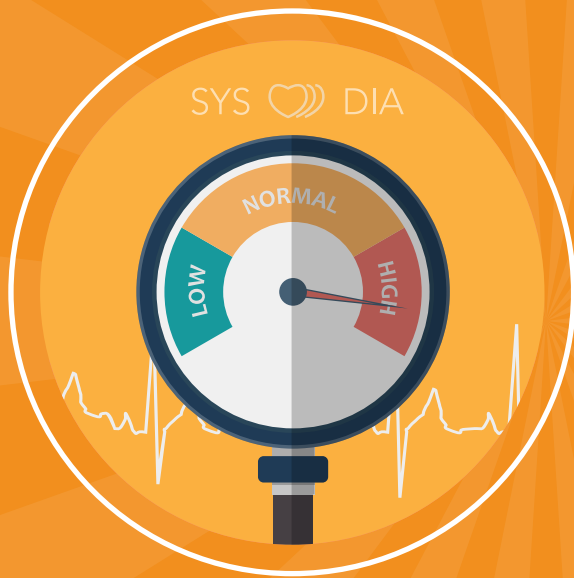
In recent years, researchers have made tremendous strides in understanding the connection between high blood pressure and various cardiovascular diseases. It turns out that elevated blood pressure damages arteries at a basic level — the endothelium.

Arteries are made up of three layers. The outer layer is mostly connective tissue that provides support to the inner two layers. The middle layer is smooth muscle that contracts and expands to facilitate circulation and maintain optimal blood pressure.

The inner layer, or endothelium, is composed of a thin layer of cells that protects the integrity of the artery. When that endothelial layer is damaged, like from high blood pressure, arterial plaques can develop.

In a sense, high blood pressure is a direct insult to the artery. And damaged arteries end up causing all kinds of cardiovascular problems. Keeping blood pressure in a safe, optimal range will have artery-preserving benefits.





#3

**Risk Factors
for High
Blood Pressure**



Risk Factors for High Blood Pressure

There are two types of risk factors for high blood pressure: ones you can modify and ones you can't. The "non-modifiable" risk factors are things like your age and family history. As much as some of us would like to change them ... we can't.

So let's focus on the risk factors that we can change — the "modifiable" ones. At the top of the list is obesity.

Carrying Too Much Weight is a Major Risk Factor

Considering that nearly 70% of Americans are overweight, this is a significant risk factor for our country. As body mass increases, blood volume increases as well, which contributes to increased blood pressure. It turns out that gaining weight accounts for as much as 65% to 75% of the risk for high blood pressure.⁴

High Sodium with Low Potassium is a Recipe for Disaster

The standard American diet is way too high in sodium and too low in potassium. A single teaspoon of table salt, which is a combination of sodium and chloride, has 2,325 milligrams (mg) of sodium — which is just below the daily amount recommended. And that's *one* teaspoon!

Then to make matters worse, most of us couple high-sodium diets with low potassium. This is a recipe for disaster, considering potassium helps to counteract sodium's effects on blood pressure.

High Sodium

Too much sodium appears to favor the release of chemical signals that cause blood vessels to constrict. Vessel constriction results in increased blood pressure.⁵

Limiting your daily intake of sodium to 2.4 grams — which is around 6 grams of table salt — should prevent its vessel-constricting and hypertensive effects.⁶

Low Potassium

Potassium-rich foods help counteract the vessel-constricting and hypertensive effects of too much sodium. Unfortunately, the standard American diet is high in sodium and low in potassium, leaving millions of people at risk for high blood pressure.

The suggested daily potassium intake for adults is 4.7 grams.

After dietary risk factors, another danger is the American fast-paced, information overloaded lifestyle. It's literally killing us.

The Go, Go, Go Lifestyle Doesn't Help

We're stressed out. We're burnt out. And our blood pressure readings show it.

Chronic stress causes the continual release of "hypertensive hormones" and can elevate blood pressure to dangerous levels. We all need to "de-stress." And the good news is there are many ways to do this. Here are a few tips for reducing stress:

- Inhale the scent of orange or lavender.
- Stand up in your office chair and do a deep stretch.
- Hang out with a pet.
- Do some yoga or take a walk.
- Sit outside in the sun for a break.

By the way, sitting outside in the sun will help boost vitamin D levels. This is a good thing for maintaining optimal blood pressure.

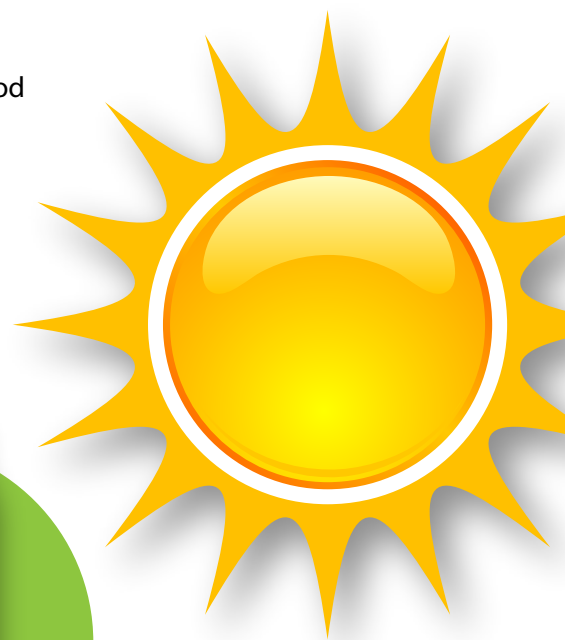
Vitamin D Helps to Optimize Blood Pressure

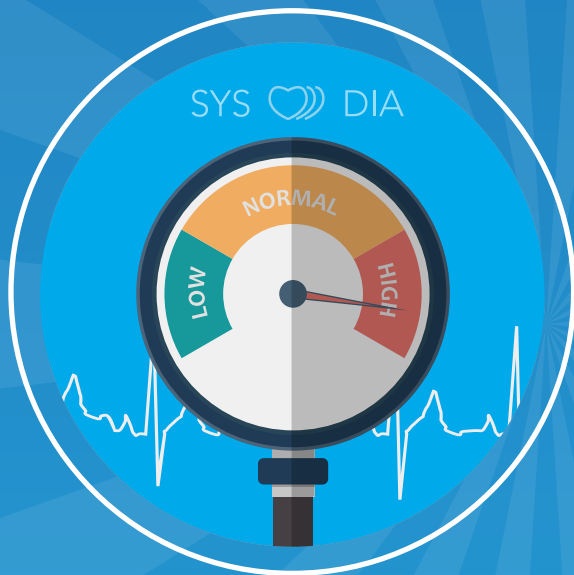
Mainstream medicine has overlooked an important contributor to healthy, optimal blood pressure: vitamin D.

Studies suggest that vitamin D targets many of the factors that contribute to high blood pressure. For instance, renin is a kidney enzyme that increases blood pressure in response to changes in blood volume. It turns out vitamin D may actually suppress renin when necessary and help keep it under control.⁷

Modify Your "Modifiable" Risk Factors!

- Limit sodium
- Increase potassium by eating leafy greens
- Lose weight (if needed)
- Reduce stress
- Increase vitamin D
- Stop smoking
- Get moving
- Keep alcohol to a minimum





#4

Consequences of High Blood Pressure

CONSEQUENCES

of High Blood Pressure

VISION

High blood pressure can strain the vessels in the eyes.

STROKE

High blood pressure damages arteries that can burst or clog more easily. High blood pressure increases your stroke risk by four to six times, and 77% of people who have a first stroke have high blood pressure.

HEART ATTACK

High blood pressure damages arteries that can become blocked. Of people who have a first heart attack, 69% have high blood pressure.

HEART FAILURE

High blood pressure can cause the heart to enlarge and fail to supply blood to the body. Of people with congestive heart failure, 75% have high blood pressure.

KIDNEY DISEASE

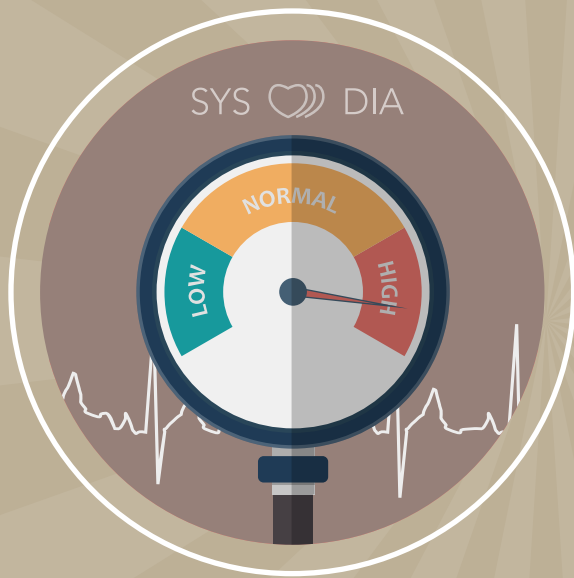
High blood pressure can cause arteries around the kidneys to narrow, weaken, or harden so not enough blood is delivered to the kidneys. Eventually, the kidneys lose their ability to filter blood. High blood pressure is the second-leading cause of kidney failure.

ERECTILE DYSFUNCTION

High blood pressure leads to erectile dysfunction because of reduced blood flow throughout the body.

*Adapted and statistics from
www.heart.org/bloodpressure*

According to the American Heart Association, the total life expectancy at 50 is five years longer for people with normal blood pressure. And the estimated cost of high blood pressure in 2010 was \$46.4 billion.



#5

Do's and Don'ts



Blood Pressure Do's and Don'ts

Managing blood pressure usually requires several strategies, such as dietary and lifestyle changes, supplements, and even prescription drugs. But with that said, there are things you don't want to do, as they may increase blood pressure, and there are things you do want to do, as they may help lower it.



DO

Exercise. Remember that little activity is better than no activity at all. Be physically active and exercise for at least 30 minutes each day.

Eat foods that promote healthy blood pressure. Increase your intake of fiber-rich whole grains, leafy greens, and low-sodium foods like lean meats and fish.

Read labels. Look for hidden sodium, not just "salt" on the label.

Lose weight. Obesity is a significant risk factor of high blood pressure.

Treat sleep apnea. Loud snorers who gasp for air every few seconds are at risk for high blood pressure.

Keep a blood pressure diary. Knowing what your average pressure has been over a long period is very helpful in evaluating changes in blood pressure during a doctor visit.



DON'T

Drink too much alcohol. Two drinks daily for men and one for women is okay, but be careful about overdoing it.

Smoke. Quitting smoking will have a major impact on blood pressure, not to mention your entire body.

Eat foods that promote high blood pressure. Processed foods, frozen dinners, ready-to-eat cereals, canned vegetables or salty snacks are definitely not on the menu.

Assume your blood pressure is normal. Check it regularly with either an at-home monitor or at your local pharmacy.

Overlook a family history. High blood pressure does run in families. With a family history, you might want to make dietary changes early as a preventive strategy.

Let your vitamin D level get too low. Vitamin D plays an important role in regulating blood pressure.

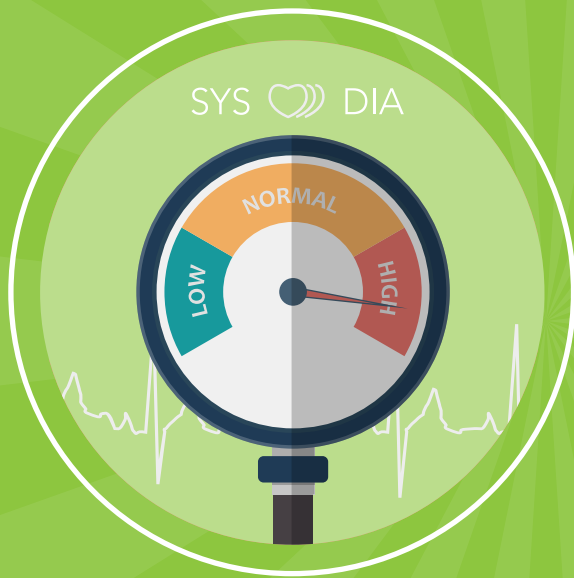


Do's When Dining Out

- Ask how the cook prepares your meal.
- Choose a restaurant where dishes are made to order.
- Ask the chef to make your dish without any type of sodium, then add a dash of salt-free seasoning you brought from home or a squeeze of lemon or lime.

When Eating Fast Food, Try These Helpful Tips:

- Get rid of the toppings except for veggies like lettuce and tomatoes.
- Skip the cheese, go easy on condiments, and don't add salt.
- Don't supersize. Order off the children's menu for smaller portions.
- Eat a low-sodium diet for the rest of the day.
- Ask for a nutrition fact-sheet at the restaurant, or find it online before you go, to help you make the best possible low-sodium choices.



#6

Keep a Blood Pressure Journal

A blood pressure journal keeps track of your readings over time.

This is important for you and your doctor. Knowing your average blood pressure over time helps with diagnosing hypertension and evaluating changes from lifestyle modifications and from taking medications and supplements.

When taking your own blood pressure reading, it's probably best to use the machines available at pharmacies and convenience stores. They're usually more reliable than home monitors.

We suggest measuring your blood pressure twice a day — once in the morning and again in the late afternoon. Take the reading at approximately the same time every day. Follow these instructions:

- 1 Sit comfortably with both feet flat on the floor and good back support.
- 2 Rest sitting for at least two minutes. Don't check your smartphone for messages or emails and don't read about a story likely to make you mad or frustrated. Believe it or not, those things can make a difference. Just relax.
- 3 Rest your arm on a table if you're taking the reading at home. Make sure the blood pressure cuff is close to the same height as your heart and is not too small.
- 4 Breathe normally and start the monitor.
- 5 Record the date and the blood pressure reading in your journal.



Use the same monitor when keeping a blood pressure journal. Although different monitors should result in the same readings, give or take a number or two, they often don't. So stick with the same one to avoid any confusion.



A journal is a great way to follow changes, accurately access blood pressure readings, and it can help aid in diagnosing high blood pressure.

Here are a few tips to consider:

Be consistent when taking the reading. This includes the time of day and following the instructions. If something is different, record it in your journal.

Don't freak out about one higher-than-normal reading. Just record it and move on with your day. However, if it's 180/110 or higher, call your doctor right away.

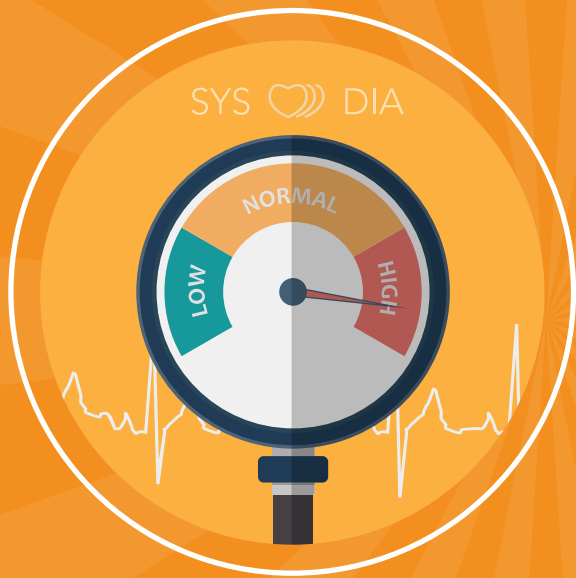
Don't take a reading when you're too stressed, physically exerting, watching TV or busy on social media. These things are stimulating and will naturally raise blood pressure. Wait until things are calmer and you've been off electronic devices for 10 to 15 minutes.

Don't take a reading during your morning coffee or afternoon energy shot. Either take the reading before these things or wait one-to-two hours.

We suggest a journal similar to this:

Date	Morning	Notes	Afternoon	Notes
5/5/16	122/76	-	136/82	Climbed stairs and didn't wait 2 minutes
5/7/16	124/78	-	128/76	-
5/8/16	120/76	-	129/80	-
5/9/16	Skipped	Forgot, busy morning	128/77	-
5/10/16	125/77	Better morning	126/79	-
5/11/16	124/76	-	129/79	-
5/12/16	124/76	-	134/82	Climbed stairs without resting again!

As you can see, a journal is a great way to follow changes, accurately access blood pressure readings, and it can help aid in diagnosing high blood pressure.



#7

**Follow the
DASH Diet**



DASH stands for the Dietary Approach to Stop Hypertension

It's very simple and can lower systolic blood pressure by 11 points.^{8,9} Here are the basic components of the diet:

- Less than 2.4 grams of sodium a day
- Increase potassium-rich foods.
- Increase magnesium-rich foods.
- Increase calcium-rich foods.
- More than 30 grams of fiber a day.
- No more than two alcoholic drinks a day for men and one a day for women.

Let's cover the parts in a little more detail.

Daily Sodium — Shoot for 2.4 grams or Less

As you already know, too much sodium appears to favor the release of chemical signals that cause vessels to constrict. And vessel constriction will increase blood pressure. So we all need to not only cut back on table salt, but also avoid hidden sodium found in some of our favorite foods.

Here's a list of foods loaded with hidden sodium, straight from WebMD's web site:¹⁰

- | | |
|-------------------------------------|--|
| ■ <i>Frozen Dinners</i> | ■ <i>Ready-to-Eat Cereals</i> |
| ■ <i>Vegetable Juices</i> | ■ <i>Marinades and Flavorings</i> |
| ■ <i>Canned Vegetables</i> | ■ <i>Spaghetti and Related Sauces</i> |
| ■ <i>Packaged Deli Meats</i> | ■ <i>Salty Snacks</i> |
| ■ <i>Canned Soups</i> | ■ <i>Pre-packaged Foods</i> |

Eat Foods Rich in Potassium, Magnesium, and Calcium

Potassium

- White beans
- Dark leafy greens
- Baked potatoes with skin
- Dried apricots
- Squash
- Salmon
- Avocados
- Bananas

Magnesium

- Dark leafy greens
- Nuts and seeds
- Fish (Mackerel)
- Beans and lentils
- Whole grains
- Avocados
- Dried fruits
- Dark chocolate

Calcium

- Milk and dairy
- Dark leafy greens
- Soybeans (Edamame)
- Enriched whole grains
- Collard greens
- Cruciferous vegetables like broccoli
- Figs
- Oranges



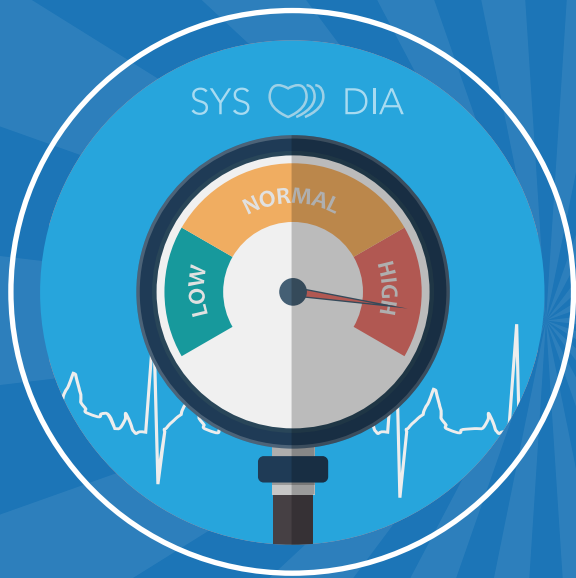
Load Up On Fiber

How dietary fiber reduces blood pressure is poorly understood, but it does! One favorite theory is that soluble fiber (dissolves in water) increases the absorption of calcium, magnesium, and potassium.¹¹

A comprehensive review of 24 clinical trials examined the effects of fiber in people with both normal and high blood pressure. They demonstrated modest reductions in both systolic and diastolic blood pressure, at an average dose of 11.5 g fiber/day.¹²

Be Cautious with Adult Beverages

Light alcohol consumption does confer benefits for cardiovascular health while heavy alcohol ingestion increases the risk of hypertension. Therefore, intake should be limited to two drinks daily for men and one drink daily for women.¹³



#8

Take the Blood Pressure Quiz



Welcome to our blood pressure quiz.

Completing the quiz will give you an idea of your overall risk for developing high blood pressure. Knowing your risk is important — it can help you and your doctor develop a plan for prevention.

Simply answer the questions and then total the number of “yes” answers. The more you have, the greater your risk of developing high blood pressure. Let’s get started!

Note: If you have high blood pressure and are taking medication, you can skip the quiz. Continue to take your meds and move on to the next section.

1 **Is your doctor “watching” your blood pressure, or have you been diagnosed with pre-hypertension?**

Yes No

2 **Do you smoke?**

Yes No

3 **Does high blood pressure run in your family?**

Yes No

4 **Are you overweight (body mass index of 25–29.9) or obese (body mass index of 30 or above)?**

Yes No

5 **Do you limit your salt intake?**

Yes No

6 **Do you eat 4 to 5 servings of vegetables per day?**

Yes No

7 **Do you drink more than 2 alcoholic beverages every day?**

Yes No

8 **Are you over 65?**

Yes No

9 **Do you have sleep apnea?**

Yes No

Total number of “Yes” answers:

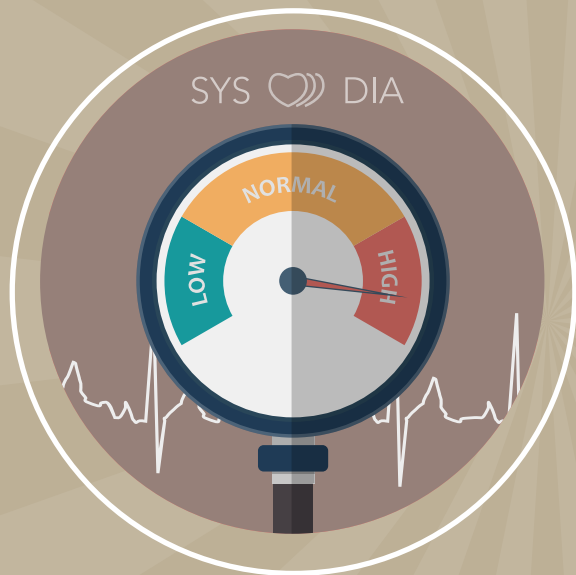
How'd you score?

Don't worry if you have a lot of "yes" answers. There's always hope! Just as a review, here are a few lifestyle suggestions that you've learned about so far:

- **Follow the DASH diet**
- **Reduce your sodium intake**
- **Enjoy regular physical activity**
- **Maintain a healthy weight**
- **Manage stress**
- **Avoid tobacco smoke**
- **If you drink, limit alcohol**

Please keep in mind, if you answered yes to three or more questions, it's probably time to see your doctor! Your doctor will accurately assess your true risk.





#9

**Nutrients for
Blood Pressure**

Here's an overview of the nutrients that can help you naturally manage your blood pressure.

We've also included related clinical evidence for each nutrient along with basic dosing suggestions.

Nutrient	Clinical Evidence	Extract Dosing
Pomegranate	<i>Inhibits the angiotensin converting enzyme (ACE) which increases blood pressure by causing blood vessel constriction.¹⁴</i>	400 mg daily
Grape seed extract	<i>Dilates blood vessels by increasing nitric oxide production.¹⁵ In people with metabolic syndrome, it reduced systolic pressure and diastolic pressure compared to a placebo.¹⁶</i>	150 to 300 mg daily
L-Arginine	<i>Dilates blood vessels by producing nitric oxide. By diet or supplementation, arginine has been found to reduce systolic pressure by 6 points and diastolic pressure between 5–7 points.¹⁷</i>	1 to 5 grams daily
Magnesium	<i>Acts like a natural calcium channel blocker and cofactor for strong vasodilators.¹⁸ Can result in significant decreases in both systolic and diastolic blood pressure.¹⁹</i>	350 to 1,500 mg daily
Potassium	<i>Reduces blood volume and blood pressure by increasing the excretion of sodium by the kidneys.²⁰</i>	99 mg or more daily when instructed by your doctor.
Hawthorn extract	<i>Hawthorn dilates blood vessels by inhibiting vasoconstriction.²¹</i>	1,200 mg daily
Garlic	<i>A meta-analysis of 11 controlled human trials showed a mean systolic decrease of 4.6 mmHg in the garlic group compared to a placebo while the mean decrease in hypertensive subjects was 8.4 mmHg for systolic and 7.3 mmHg for diastolic.²²</i>	1,500 to 6,000 mg daily
Olive leaf	<i>Olive leaf extract has been found to effectively lower blood pressure.^{23,24}</i>	500 to 1,500 mg daily
Celery seed	<i>Celery seed extracts have potent vasorelaxant properties. In one study, systolic blood pressure decreased on average 8.2 points while diastolic pressure dropped an average of 8.5 points.²⁵</i>	300 mg daily
Quercetin, Myricitrin & Myricetin	<i>Flavonoids that have shown effectiveness in lowering blood pressure.</i>	Usually comes in a proprietary blend with quercetin of 85 mg twice daily.
Stevioside (from the stevia plant)	<i>Acts as a natural calcium channel blocker.²⁶</i>	375 mg twice daily

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