

Top Tips to Lower Your Blood Pressure

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✓ Fact Checked

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STORY AT-A-GLANCE

- › Nearly half of American adults have high blood pressure (hypertension), which increases your risk for stroke, heart failure, sexual dysfunction, vision loss, heart attack, kidney disease and kidney failure
- › Elevated insulin and leptin levels are typically the cause of hypertension, so implementing strategies to normalize these levels are the first steps to resolving hypertension. In addition to checking your blood pressure, check your fasting insulin level. A healthy level to strive for is about 2 $\mu\text{U}/\text{mL}$ or 3 $\mu\text{U}/\text{mL}$
- › To address high blood pressure, be sure to swap out processed foods for whole foods. Also consider going organic. Foods notorious for causing blood pressure to rise that should be avoided include processed foods, most grains, partially hydrogenated oils (synthetic trans fats) and seed oils (aka vegetable oils) such as corn, canola, soy and safflower oils
- › Keep an eye on your sodium-to-potassium and omega-3-to-omega-6 ratios. Also optimize your vitamin D level, ideally through regular sun exposure
- › Exercise regularly, making sure you include isometric (static contraction) exercises such as wall squats and planking, and learn how to effectively address day-to-day stress. One effective stress management tool is the Emotional Freedom Techniques (EFT)

According to the U.S. Department of Health and Human Services, nearly half of American adults have high blood pressure, currently defined as blood pressure consistently at or above 130/80 mm Hg.¹

High blood pressure increases your risk for a number of serious health problems, including stroke, heart failure, sexual dysfunction, vision loss, heart attack, kidney disease and kidney failure.²

Four out of 5 adults with high blood pressure are outrageously recommended to take prescription medication as the first step to lowering it, and all are advised to implement lifestyle changes. The fact that 3 out of 4 hypertensive patients still do not have their blood pressure under control really emphasizes the need for basic lifestyle changes to resolve this problem.³

While medical textbooks claim most cases of high blood pressure are idiopathic, meaning the underlying cause is unknown, this is simply not true. High blood pressure is typically a symptom of insulin and leptin resistance, and most people can normalize their blood pressure without resorting to drugs.

What Causes High Blood Pressure?

One of the primary underlying causes of high blood pressure is related to your body being metabolically inflexible and producing too much insulin and leptin in response to a high-carbohydrate and processed food diet. As your insulin and leptin levels rise, it causes your blood pressure to increase. As noted in one study:⁴

"Insulin resistance and hypertension are the components of metabolic syndrome and often coexist. Clinical studies have shown that about 50% of hypertensive individuals have hyperinsulinemia or glucose intolerance, whereas up to 80% of patients with Type 2 diabetes have hypertension."

Elevated uric acid levels are also significantly associated with high blood pressure, so any program adopted to address high blood pressure needs to help normalize both your insulin sensitivity and uric acid level.

As it turns out, by radically lowering your sugar and processed food intake, you can address all three issues in one fell swoop. I'll also review several other treatment strategies in upcoming sections. But first, let's review some of the basics of what high

blood pressure is, how to assess obesity-related hypertension risk, and why drugs aren't an ideal solution.

How's Your Blood Pressure?

There are two numbers given in a blood pressure reading. The upper or first number is your systolic blood pressure. The lower or second number is your diastolic pressure. For example, a reading of 120/80 mm Hg means you have a systolic pressure of 120 and a diastolic pressure of 80.

Systolic arterial pressure is the highest pressure in your arteries. It occurs when your ventricles contract at the beginning of your cardiac cycle. Diastolic pressure refers to the lowest pressure and occurs during the resting phase of your cardiac cycle. Ideally, your blood pressure should be about 120/80 without medication.

If you're older than 60, your systolic pressure is the most important cardiovascular risk factor. If you're younger than 60 and have no other major risk factors for cardiovascular disease, then your diastolic pressure is believed to be a more important risk factor.⁵

According to the latest guidelines,⁶ issued in 2017 by the American Heart Association, the American College of Cardiology, and nine other health organizations, the following blood pressure classifications are used to determine whether you might suffer from hypertension:

Blood Pressure Categories



BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

Hypertension is also categorized as either primary or secondary. Primary hypertension applies to most people with high blood pressure, and while the conventional view is that the cause is idiopathic or unknown, it's typically linked to insulin/leptin resistance. Secondary hypertension refers to high blood pressure that is caused by another medical condition, such as chronic liver disease.

What's Your Fasting Insulin Level?

I believe most all Stage 1 and even a high percentage of Stage 2 hypertension can be successfully treated to where drugs become unnecessary, provided you're aggressive enough in your diet and lifestyle modifications. However, if you have seriously elevated blood pressure, it would be wise to be on medication to prevent a stroke while you're revising your lifestyle.

In addition to checking your blood pressure on a regular basis, I highly recommend getting a fasting insulin level test done. Remember, high blood pressure and insulin resistance tend to go together, and if your hypertension is the result of elevated insulin levels, you'll know how to nip it in the bud by the end of this article.

The fasting insulin level you want to strive for is about 2 or 3 microU per mL ($\mu\text{U}/\text{mL}$). If it's 5 or above, you clearly need to lower your insulin level to reduce your risk of high blood pressure and other cardiovascular health hazards. Keep in mind that the so-called "normal" fasting insulin level is anywhere from 5 to 25 $\mu\text{U}/\text{mL}$. Please do not make the mistake of thinking that this "normal" insulin range equates to optimal.

How to Find a Blood Pressure Measuring Device

According to a 2019 study,⁷ nearly 46% of American adults could benefit from self-monitoring to avoid "white coat" hypertension. Whether you suspect (or know) you have high blood pressure, an automatic blood pressure meter is a good investment for every household.

Top rated blood pressure meters for home use include the following. Consumer Reports tested these devices for accuracy, comfort, clarity of display and ease of use, and all are commercially available on Amazon and other large retailers and pharmacies:⁸

- Omron Platinum BP5450
- Omron Silver BP5250
- Omron 10 Series BP7450
- A&D Medical UA767
- Rite Aid Deluxe Automatic BP3AR1-4DRITE

To measure your blood pressure, follow these guidelines:⁹

- Don't exercise, smoke or drink coffee or caffeinated beverages within 30 minutes of measuring your blood pressure. Also empty your bladder and relax for at least five minutes beforehand.
- Sit with your back straight on a firm chair. Avoid sitting on the couch as that encourages slouching. Keep your feet flat on the floor and do not cross your ankles or legs.

- Make sure your arm is supported on a flat surface, such as an armrest or table, with your upper arm at heart level.
- Place the blood pressure cuff directly above the bend of your elbow on bare skin. Do not measure on top of clothes. The cuff should be snug but not too tight nor too loose. Press the Start button and remain still while the pressure is being taken.
- Measure your blood pressure at the same time every day, and take multiple readings each time. Ideally, take two readings one minute apart and record the results.

How to Avoid a False Hypertension Diagnosis

To avoid a false hypertension diagnosis, keep in mind that your blood pressure reading can vary significantly from day to day, and even from one hour to the next, so don't overreact if you get one high reading here or there. It's when your blood pressure remains consistently or chronically elevated that significant health problems can occur. Several factors can affect the validity of your blood pressure reading, including:

- **Incorrect blood pressure cuff size** — If you're overweight, taking your reading with a size "average" blood pressure cuff can lead to a falsely elevated blood pressure reading, so make sure your doctor or health care professional is using the correct cuff size for your arm.
- **Incorrect arm position** — If your blood pressure is taken while your arm is parallel to your body, your reading can be up to 10% higher than it really is. Blood pressure readings should always be taken with your arm at a right angle to your body.
- **Nervousness** — "White coat hypertension" is a term used for when a high blood pressure reading is caused by the stress or fear associated with a doctor or hospital visit. This can be a transient yet serious concern. If this applies to you, stress reduction is key.

To decrease your risk of being falsely diagnosed with hypertension in this situation, take a moment to calm down (be sure to arrive for your appointment ahead of time

so you can unwind), then breathe deeply and relax when you're getting your blood pressure taken.

Use Waist-to-Hip Ratio to Assess Your Hypertension Risk

Research suggests your waist size may be an effective measure for assessing obesity-related hypertension risk.¹⁰ If you have a high waist-to-hip ratio, i.e., you carry more fat around your waist than on your hips, you may be at an increased risk for obesity-related hypertension. Your waist size is also a powerful indicator of insulin sensitivity, and studies indicate that waist size is one of the most powerful ways to predict your risk for diabetes.

To calculate your waist-to-hip ratio, measure the circumference of your hips at the widest part, across your buttocks, and your waist at the smallest circumference of your natural waist, just above your belly button. Then divide your waist measurement by your hip measurement to get the ratio.

The University of Maryland offers an online waist-to-hip ratio calculator¹¹ you can use. The Mayo Clinic uses the following waist-to-hip ratio designations to evaluate your health risk:

Waist-to-Hip Ratio (WHR) Norms				
Gender	Excellent	Good	Average	At Risk
Males	<0.85	0.85–0.89	0.90–0.95	≥0.95
Females	<0.75	0.75–0.79	0.80–0.86	≥0.86

Drugs Can Increase Risk of Fall-Related Injuries

Before I review lifestyle modifications that can help you normalize your blood pressure, I want to address the issue of medications. It's important to realize that while blood pressure medications can be very effective at lowering blood pressure, they do not in any way, shape or form address the underlying cause.

According to the most recent statistics from the American Heart Association, about 20% of people with hypertension have resistant hypertension, meaning they cannot control it with three or more medications,¹² so these drugs clearly don't work as advertised for a lot of people.

There are also side effects to contend with; some of them quite harmful and/or debilitating. For example, one JAMA study¹³ found that hypertensive patients over the age of 70 who were taking blood pressure medication increased their risk of serious falls requiring hospitalization due to fractures, brain injuries, or dislocation of the hip, knee, shoulder or jaw.

The risk of falling can increase if your blood pressure drops too low, too suddenly, upon standing. According to the authors:¹⁴

"Antihypertensive medications were associated with an increased risk of serious fall injuries, particularly among those with previous fall injuries. The potential harms vs benefits of antihypertensive medications should be weighed in deciding to continue treatment with antihypertensive medications in older adults with multiple chronic conditions."

Some Blood Pressure Drugs Raise Risk of Blindness

Another major population study discovered that hypertension drugs called vasodilators increase your risk of early onset age-related macular degeneration (AMD), which is the most common cause of blindness among American seniors. As noted in a press release:¹⁵

"... [R]esearchers ... conducted a long-term population-based cohort study from 1988 to 2013 of nearly 5,000 residents of Beaver Dam, Wis., aged 43 to 86 years ...

The researchers found that, after adjusting for age, sex and other factors, using any vasodilator such as Apresoline and Loniten, which open (dilate) the blood

vessels – was associated with a 72% greater risk of developing early-stage AMD.

Among people who were not taking vasodilators, an estimated 8.2% developed signs of early AMD. In comparison, among those taking a vasodilator medication, 19.1% developed the disease.

The researchers also found that taking oral beta blockers such as Tenormin and Lopressor was associated with a 71% increase in the risk of neovascular AMD, a more advanced and vision-threatening form of the disease.

Among those who were not taking oral beta blockers an estimated 0.5% developed signs of neovascular AMD. In comparison among those taking oral beta blockers, 1.2% developed neovascular AMD."

Key Lifestyle Strategies for Lowering Your Blood Pressure

Alright, time to get down to the nitty gritty of normalizing your blood pressure. As mentioned earlier, high blood pressure is typically associated with insulin resistance, which results from eating a diet too high in the omega-6 fat linoleic acid (LA). As your insulin level elevates, so does your blood pressure.

Excessive omega-6/LA consumption is another dietary factor that contributes to high blood pressure by hardening your arteries (atherosclerosis), which researchers now have pinpointed as yet another treatment focus for hypertension.

So, make sure you avoid all trans fats or hydrogenated fats that have been modified in such a way to extend their shelf life. This includes margarine, seed oils and "butter-like" spreads. Of course, this also includes all foods made or cooked with these fats.

The late Dr. Fred Kummerow was the first scientist to document the dangers of trans fats. Trans fats prevent the formation of prostacyclin, which acts as a natural blood-thinning agent. By diligently avoiding trans fats, your body will make prostacyclin that keeps your blood thin, which will reduce your risk of heart attack and stroke.

Now, if you think about these two factors alone – insulin resistance and atherosclerosis – what kind of diet is bound to produce high blood pressure? The answer, of course, is a processed food diet, loaded with high fructose corn syrup, grains and damaged omega-6 fats, a majority of which are LA.

Knowing that, the answer to correcting high blood pressure becomes rather self-evident. If your blood pressure is running high, you need to restore your insulin and leptin sensitivity, and the following strategies are among the most effective for doing so:

- 1. Replacing processed foods with whole, unprocessed organic foods.**
- 2. Avoiding all seed oils** – It would be helpful to also eliminate seeds and nuts unless you have been on a low LA diet for at least three years.
- 3. Optimizing your vitamin D** (which I discuss in greater detail below).
- 4. Only use healthy fats** – Sources of healthy fats to add to your diet include: grass fed butter, raw organic dairy, organic pastured egg yolks, coconuts, coconut oil and macadamia nuts, grass fed meats and pasture-raised poultry.

The best carbs to add would be ripe fruit that you tolerate well. But, the key is to make sure your fat intake is below 30%, which you can determine with Cronometer. If you fail to do this the carbs can convert to fat and change your cholesterol profile unfavorably.

- 5. Exercising regularly** – In an upcoming section, I'll review the most effective type of exercise if you have high blood pressure.

Vitamin D Can Relax Arteries and Improve Blood Pressure

Vitamin D deficiency and high consumption of harmful omega-6 fats like [linoleic acid \(LA\)](#) can lead to stiff arteries. Vitamin D deficiency appears to be associated with both arterial stiffness and hypertension.¹⁶

Each cell in your body has a DNA library that contains information needed to address virtually every kind of stimulus it may encounter, and the master key to enter this library is activated vitamin D. This is why vitamin D functions in so many different tissues and affects such a large number of different diseases and health conditions, one of which is heart disease.

Research¹⁷ has shown that the farther you live from the equator, the higher your risk of developing high blood pressure. Blood pressure also tends to be higher in winter months than during the summer. Exposing your bare skin to sunlight affects your blood pressure through a variety of different mechanisms, including the following:

- Sun exposure causes your body to produce vitamin D. Lack of sunlight reduces your vitamin D stores and increases parathyroid hormone production, which increases blood pressure.
- Vitamin D deficiency has also been linked to insulin resistance and metabolic syndrome, a group of health problems that can include insulin resistance, elevated cholesterol and triglyceride levels, obesity, and high blood pressure.
- Vitamin D is also a negative inhibitor of your body's renin-angiotensin system (RAS), which regulates blood pressure.¹⁸ If you're vitamin D deficient, it can cause inappropriate activation of your RAS, which may lead to hypertension.
- Additionally, exposure to UV rays is thought to cause the release of endorphins, chemicals in your brain that produce feelings of euphoria and relief from pain. Endorphins naturally relieve stress, and stress management is an important factor in resolving hypertension.

Guidelines for Optimizing Your Vitamin D Level

Ideally, you'll want to get your vitamin D through sun exposure on your bare skin. If you opt for an oral vitamin D supplement, make sure you use vitamin D3, not D2, which is typically prescribed by doctors but has been linked to poorer health outcomes.

Also, make sure to measure your vitamin D level before you start supplementing. The reason for this is because you cannot rely on blanket dosing recommendations. The crucial factor here is your blood level, not the dose, as the dose you need is dependent on several individual factors, including your baseline blood level.

Data from GrassrootsHealth's D*Action studies suggest the optimal level for health and disease prevention is between 60 ng/mL and 80 ng/mL, while the cutoff for sufficiency appears to be around 40 ng/mL.

In Europe, the measurements you're looking for are 150 to 200 nmol/L and 100 nmol/L respectively. That said, as a general guideline, research by GrassrootsHealth suggests that adults need about 8,000 IUs per day to achieve a serum level of 40 ng/mL.

I've published a comprehensive [vitamin D report](#) in which I detail vitamin D's mechanisms of action and how to ensure optimal levels. I recommend downloading and sharing that report with everyone you know. A quick summary of the key steps is as follows:

- 1. First measure your vitamin D level** – Your doctor can order this test for you.
- 2. Assess your individualized vitamin D dosage** – To do that, you can either use the chart below, or use GrassrootsHealth's [Vitamin D*calculator](#). To convert ng/mL into the European measurement (nmol/L), simply multiply the ng/mL measurement by 2.5. To calculate how much vitamin D you may be getting from regular sun exposure in addition to your supplemental intake, use the DMinder app.¹⁹

Vitamin D intake observed to produce noted 25(OH)D serum levels in 90% of adults (age 18 years and older), weighing 150 lbs. (N=7324)

RECOMMENDED RANGE: 40-60 ng/ml

WHAT TO DO

- 1 Test
- 2 Establish recommended intake level
- 3 Test again in 3-6 months

(For supplements, vitamin D3, cholecalciferol may be used.)

Individuals should consult with a health care practitioner to develop a custom plan.

Change in Serum Level Based on Intake (IU/day) for 90% of Adults* (N=7324)

Expected Level (ng/ml)	20	30	40	50	60
10	2000	4000	6000	10,000	10,000
15	1000	3000	6000	9000	10,000
20		2000	5000	8000	10,000
25		1000	4000	7000	10,000
30			3000	6000	10,000
35			1000	5000	9000
40				3000	8000
45				2000	6000
50					4000

* values rounded to the nearest 1000 IU; highest recommended intake is 10,000 IU/day

Example: With a starting serum level of 20 ng/ml, an additional intake of approximately 5000 IU/day would be sufficient for 90% of adults (age 18 years and older, weighing 150 lbs) to achieve a serum level of at least 40 ng/ml.

3. Retest in three to six months – Lastly, you’ll need to remeasure your vitamin D level in three to six months, to evaluate how your sun exposure and/or supplement dose is working for you.

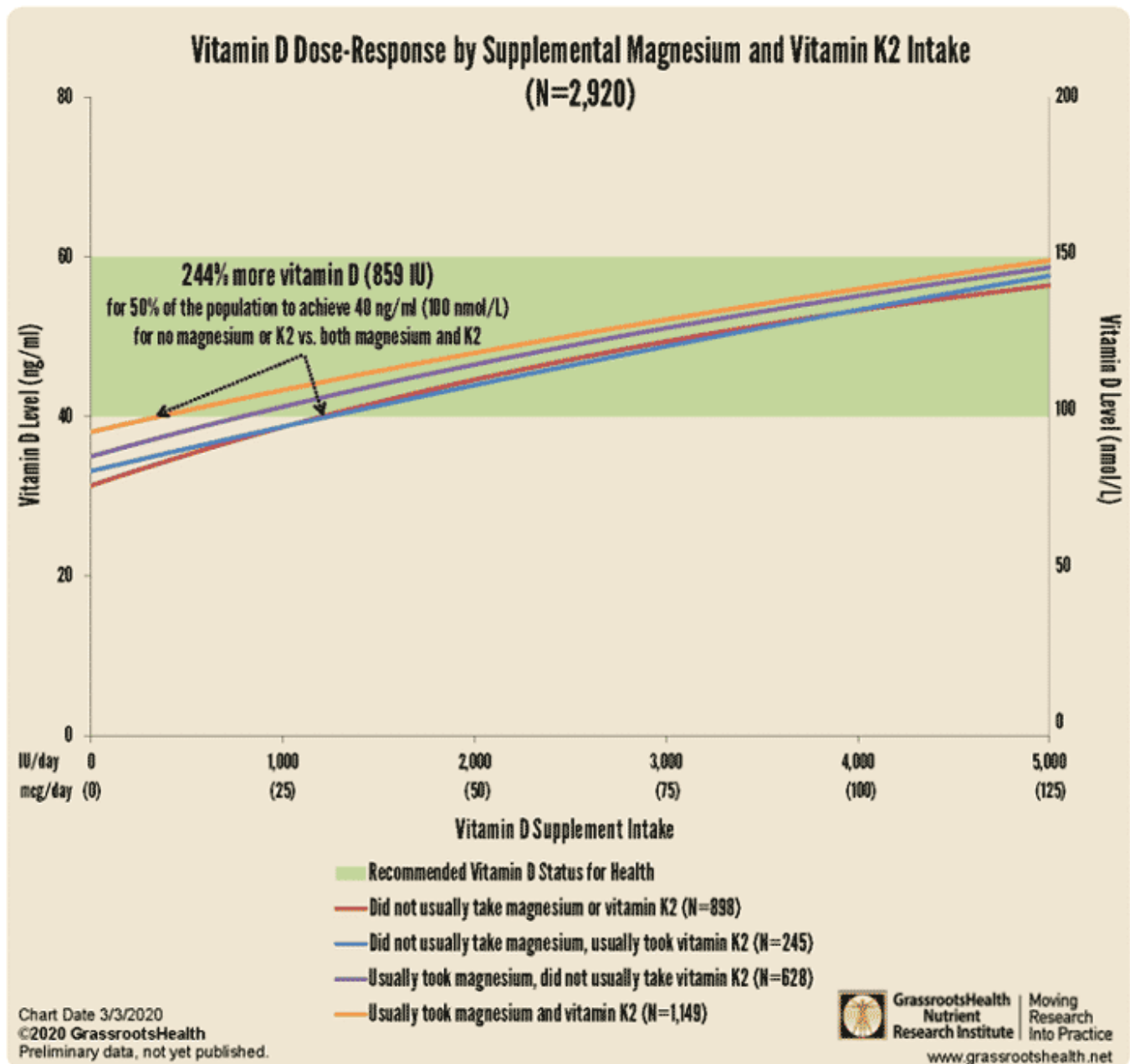
Take Your Vitamin D With Magnesium and K2

Keep in mind that if you decide to supplement with oral vitamin D3, you also need to boost your vitamin K2 intake, as these two nutrients work in tandem. Together, vitamin D and vitamin K2 produce and activate Matrix GLA Protein (MGP), which congregates around the elastic fibers of your arterial lining, guarding them against calcium crystal formation.

Vitamin K2 also activates a protein hormone called osteocalcin, produced by osteoblasts, which is needed to bind calcium into the matrix of your bone. Osteocalcin also appears to help prevent calcium from depositing into your arteries.

In other words, without the help of vitamin K2, the calcium that vitamin D so effectively lets in can work against you by building up inside your arteries rather than your bones.

It's also strongly recommended to take magnesium concomitant with oral vitamin D and K2. Data from nearly 3,000 individuals reveal you need 244% more oral vitamin D if you're not also taking magnesium and vitamin K2.²⁰ What this means in practical terms is that if you take all three supplements in combination, you need far less oral vitamin D in order to achieve a healthy vitamin D level.



Two Key Factors to Consider When Buying Meat

While some studies suggest a vegetarian diet can help resolve high blood pressure, I do not believe this makes for an ideal diet in the long run, as avoiding all meats can lead to nutritional deficiencies.

From what I've learned, I believe the quality and quantity of the meat may be a major part of the equation. First, in terms of quantity, if you eat more protein than your body needs, it will convert most of those calories to sugar. Additionally, it will need to remove the nitrogen waste products from your blood, which will stress your kidneys and deteriorate kidney function if you already have compromised kidneys

As a general guideline, most adults need about 0.6 to 0.8 grams of protein per pound of lean body mass. (As an example, if your body fat mass is 20%, your lean mass is 80% of your total body weight.)

In terms of quality, meat from organically raised, grass fed and finished animals is far superior to that from animals raised in concentrated animal feeding operations (CAFOs).

CAFO beef and poultry have many disadvantages, including fewer of the most valuable nutrients found in organically raised meats, while being contaminated with hormones, antibiotics, drugs, pesticides and herbicides like glyphosate. Furthermore, since most CAFOs feed animals genetically engineered (GE) grains (primarily corn and soy), there's also the issue of whether such feed might alter the meat in ways we still have not recognized.

Also, it is best to restrict your meat choices to beef, bison, lamb and other ruminant game animals. It is best to avoid chicken and pigs as, even if pasture-raised and organically fed, they are given grains and other foods that are high in LA so they will increase your LA levels.

Should You Cut Sodium to Lower Your Blood Pressure?

Insulin also affects your blood pressure by causing your body to retain sodium. Sodium retention causes fluid retention. Fluid retention in turn can cause high blood pressure, which may ultimately lead to congestive heart failure.

A standard recommendation if you have high blood pressure is to reduce the amount of sodium in your diet. While it's certainly beneficial to cut out processed foods and salt, limiting sodium is not the hypertension cure that many think it is.

If you're simply opting for low-sodium processed foods, you're hardly doing your health any favors, as such fare is likely compensating for the lack of flavor with harmful fats and/or sugar. You've probably heard of the DASH diet,²¹ which is claimed to be among the most effective for controlling hypertension. It consists largely of fresh vegetables, fruits, lean protein, whole grains, low-fat dairy and very low sodium content.

Processed foods and LA promote hypertension to a far greater degree than excess salt. Salt is essential for maintaining and regulating blood pressure, but the crux lies in the type of salt you consume.

Natural unprocessed salt, such as Himalayan salt, contains 84% sodium chloride and 16% naturally occurring trace minerals. Processed (table) salt, on the other hand, contains 97.5% sodium chloride and the rest are manmade chemicals. The natural, unprocessed form is essential for good health; table salt is best avoided altogether.

But there's yet another factor that comes into play when we're talking about sodium and blood pressure, and that's the issue of maintaining a healthy sodium-to-potassium ratio. Your body needs potassium to maintain proper pH levels in your body fluids, and it also plays an integral role in regulating your blood pressure. In fact, potassium deficiency may be a greater contributor to high blood pressure than excess sodium.

The Importance of Proper Sodium-to-Potassium Ratio

People who eat processed foods frequently and very few fresh fruits and vegetables likely have an imbalance in their sodium-potassium ratio. The key to relaxing your arterial walls and reducing blood pressure is the ratio between sodium and potassium.

If you're unsure of your sodium and potassium intake, use [chronometer.com/mercola](https://www.chronometer.com/mercola), which is a nutrient tracker that allows you to enter foods and then calculates the ratios automatically. Generally, it's recommended that you eat five times more potassium than sodium.

According to the U.S. Department of Agriculture,²² the average intake of potassium in the U.S. population is 2,640 milligrams (mg) per day. Other surveys have found similar intakes.²³ Meanwhile, the National Academies Sciences Engineering Medicine (formerly Institute of Medicine) recommends 4,700 mg per day for people over the age of 14.²⁴

Potassium helps lower your blood pressure by relaxing the walls of your arteries, and according to Harvard Health,²⁵ many people with high systolic blood pressure can successfully lower it simply by increasing their potassium intake.

In my view the absolute best way to increase your potassium is by eating ripe fruit. I typically get around 3,000 mg from watermelon, orange juice and tangerines, and another 2,000 mg from other sources.

For a more complete list of potassium-rich foods, see DietaryGuidelines.gov's "Food Sources of Potassium" page.²⁶ Taking potassium supplements is not a good strategy and simply will not provide you with the benefits you seek.

The Best Exercises for High Blood Pressure

Exercise is well-known for its ability to normalize blood pressure, but all forms of exercise are not the same in this regard. Existing exercise guidelines for blood pressure management emphasize cardio, such as running and cycling.

But, a recent investigation revealed that isometric exercise, where your muscles are in static contraction, is the most effective for lowering blood pressure, while aerobic exercise is next to last in terms of effectiveness.

A July 2023 meta-analysis²⁷ reviewed 270 randomized controlled trials published between 1990 and February 2023 that reported reductions in systolic blood pressure

(SBP) and/or diastolic blood pressure (DBP) following an exercise intervention of two weeks or more, with a pooled sample size of 15, 827 people. In rank order, the analysis found significant reductions in resting SBP and DBP following:

- Isometric exercise (-8.24/-4.00 mmHg)
- Combined training (-6.04/-2.54 mmHg)
- Dynamic resistance training (-4.55/-3.04 mmHg)
- Aerobic exercise (-4.49/-2.53 mmHg)
- High-intensity interval training (-4.08/-2.50 mmHg)

Effectiveness based on the "surface under the cumulative ranking curve" (SUCRA) values for systolic – which refers to the mean probability of being the best for lowering your systolic blood pressure – placed isometric exercise in the No. 1 slot with an effectiveness rating of 98.3%, followed by combined training (75.7%), dynamic resistance training (46.1%), aerobic exercise training (40.5%) and high-intensity interval training (39.4%).

“ Various exercise training modes improve resting blood pressure, particularly isometric exercise. The results of this analysis should inform future exercise guideline recommendations for the prevention and treatment of arterial hypertension. ~ British Journal of Sports Medicine ”

In secondary meta-analyses of submodes, the wall squat was the most effective for reducing SBP, while running was most effective for reducing DBP. In conclusion, the authors noted:²⁸

"Various exercise training modes improve resting blood pressure, particularly isometric exercise. The results of this analysis should inform future exercise

guideline recommendations for the prevention and treatment of arterial hypertension."

The key take-home is that static contraction of muscle as you hold your body in one position, i.e., isometric exercise, is the most effective type of exercise if you want to lower your blood pressure. Examples of isometric exercises include the following.^{29,30,31} For more details, including exercise instructions, see "[Which Exercises Are Best for Lowering Blood Pressure?](#)"

Wall squat	Isometric calf raise	Planking
Hollow-body hold	Low isometric squat	Static slide lunge
Overhead hold	Iso hang	Glute bridge
Incline pushup hold	V-sit	Single-leg stand

Addressing Stress-Related Hypertension

Although many people believe that the "tension" part of hypertension refers to stress as the cause, the primary cause is, as previously mentioned, insulin and leptin resistance. That said, the link between stress and hypertension is well-documented.

In fact, it has been shown that people with heart disease can significantly lower their risk of a cardiac event by learning to manage their stress. Suppressed negative emotions such as fear, anger and sadness can radically increase your cortisol levels and severely limit your ability to cope with the unavoidable everyday stresses of life.

It's not the stressful events themselves that are harmful, but your lack of ability to cope. The good news is, strategies exist to rapidly and effectively transform your suppressed, negative emotions, and relieve stress.

One of the most well-studied of these is an energy psychology method called the Emotional Freedom Techniques (EFT). By teaching your body to slow down and relax

when stress hits – essentially short-circuiting your physical stress reaction – you can protect your health. EFT is easy to learn and can be done just about anytime, anywhere. For a demonstration, see the video below.

Other Helpful Strategies

In addition to everything already mentioned, there are still more dietary and lifestyle strategies that can be of help if you struggle with high blood pressure. Here are several additional alternatives for your consideration:

Avoid caffeine – The connection between coffee consumption and high blood pressure is not well understood, but there is ample evidence to indicate that if you have high blood pressure, coffee and other caffeinated drinks and foods can exacerbate your condition.

Supplement with vitamins C and E – Studies indicate that vitamins C³² and E³³ may be helpful in lowering blood pressure. If you're eating a whole food diet, you should be getting enough of these nutrients through your diet alone.

Unless you have radically lowered your LA tissue levels, it is vital to take the correct vitamin E supplement until you do, as it will limit the damage that LA can cause. I consider it to be one of the three most important supplements you can take. It is also helpful in lowering dangerous estrogen levels in your body that can increase your risk of cancer.

If you decide you need a supplement, make sure to take a natural (not synthetic) form of vitamin E. You can tell what you're buying by carefully reading the label. Natural vitamin E is always listed as the 'd-' isomer (d-alpha-tocopherol, d-beta-tocopherol, etc.) Synthetic vitamin E is listed as 'dl-' isomers.

Eat more fruit and berries – In what researchers called the first-of-its-kind study in the U.K., scientists used objective measures for dietary intake across thousands of

residents, using data for 25,618 people in Norfolk, U.K., and compared the data against their blood pressure measurements.³⁴

The difference in blood pressure between those with the lowest 10% of flavanol intake and those with the highest 10% of intake was between 2 and 4 mmHg. According to the authors, this was comparable to the difference measured when a person switched to a Mediterranean diet or the Dietary Approaches to Stop Hypertension (DASH) diet.

Because fruit contains fructose, it can increase your risk of insulin resistance if you eat large amounts; examples of lower fructose fruits that are beneficial for most people include avocados, berries, kiwi and citrus fruits.

Quercetin – Quercetin has also been shown to lower blood pressure. Quercetin is a flavonol found in red grapes, onions, red leaf lettuce, elderflower and green tea, to name a few.³⁵

According to a Japanese study,³⁶ quercetin helps lower blood pressure by modifying vascular compliance and resistance, total blood volume and the autonomic nervous system. It also appears to have a unique ability to regulate gene expression that is mediated by controlling negative chloride actions in the cell's cytosol.

Negative chloride ions help control the intracellular activity of many other ions in the cytosol, which is the water-based fluid that surrounds intracellular structures. The gene expression that controls the chloride ions triggers sodium reabsorption, which then reduces body fluid volume and therefore influences volume-mediated high blood pressure.

The researchers noted several past studies that demonstrated taking between 150 mg per day and 730 mg per day could lower high blood pressure, decreasing both systolic and diastolic pressures.

Supplement with magnesium – Magnesium is also important for healthy blood pressure and few people get enough from their diet these days. Hundreds of studies

and scientific papers show there's a clear [correlation between magnesium and high blood pressure](#).

Magnesium stored in your cells relaxes muscles. If your magnesium level is too low, your blood vessels will constrict rather than relax, and this constriction raises your blood pressure.

According to a 2011 paper³⁷ in The Journal of Clinical Hypertension, magnesium intake of 500 mg to 1,000 mg per day may reduce blood pressure by as much as 5.6/2.8 mmHg. Its blood pressure lowering effects are most pronounced when potassium intake is also high, and sodium intake low.

Magnesium also boosts the effectiveness of "all antihypertensive drug classes," according to this paper. Magnesium-rich foods³⁸ include baked potato and white rice, just to name a few. That said, the magnesium content of most foods is dwindling due to the destruction of soils, so it's one nutrient that I recommend taking as a supplement.

Engage in inspiratory muscle strength training (IMST) – Strengthening your breathing muscles with IMST can also be helpful. IMST was originally developed for critically ill patients with respiratory diseases. It helped to improve the strength of their inspiratory muscles by using a handheld device that provides resistance while inhaling.

A 2021 study³⁹ evaluated the effect that IMST could have on reducing blood pressure and thus reducing the risk of cardiovascular disease. Thirty-six adults aged 50 to 79 who had above normal systolic blood pressure were enrolled. Half the participants used high resistance IMST and the other half used low resistance IMST for six weeks. At the end of the intervention, the group using high resistance had a nine-point reduction in their systolic blood pressure.

The daily training consists of 30 breaths a day. The breathing exercise takes just five to 10 minutes a day, with benefits noticeable within two weeks. You can learn more about this in "[Breathing Exercise Could Reduce Blood Pressure](#)."

Take Control of Your Blood Pressure

The best treatment strategy for high blood pressure is to evaluate your lifestyle and make the necessary adjustments, with particular emphasis on normalizing your insulin and leptin levels. We've covered a lot of ground in this report, so here's a summary of key points to remember:

In addition to checking your blood pressure, check your fasting insulin level. A healthy level to strive for is about 2 $\mu\text{U}/\text{mL}$ or 3 $\mu\text{U}/\text{mL}$.

Swap out processed foods for whole foods and implement TRE. Also consider going organic. Meats should ideally be grass fed and pasture finished. Foods notorious for causing blood pressure to rise and that should be avoided include processed foods, most grains, partially hydrogenated oils (synthetic trans fats), and seed oils (aka vegetable oils) such as corn, canola, soy and safflower oils.⁴⁰

Keep an eye on your sodium-to-potassium and omega-3-to-omega-6 ratios. This is automatically done if you swap processed foods for whole foods and make sure you are eating plenty of ripe fruit that you enjoy and is adjusted to your activity rate and fat intake.

Optimize your vitamin D level, ideally through regular sun exposure.

Exercise regularly, and make sure you include isometric (static contraction) exercises such as wall squats and planking.

Learn how to effectively address day-to-day stress. One effective stress management tool is the Emotional Freedom Techniques (EFT).

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