

At-Home Heat Therapy Lowers Blood Pressure

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STORY AT-A-GLANCE

- › Heat therapy is a simple, at-home method proven to lower blood pressure and improve blood vessel flexibility, offering heart benefits similar to exercise without physical strain
- › A study in the *Journal of Applied Physiology* found that older adults who used heated garments for eight weeks lowered their systolic blood pressure by about 5 mm Hg – a reduction that cuts heart attack and stroke risk by roughly 10%
- › Research in the *American Journal of Physiology* showed that hot water immersion raises core body temperature more effectively than traditional or far-infrared saunas, producing stronger cardiovascular and immune responses
- › Near-infrared sauna therapy adds another layer of support by activating cellular energy production, boosting nitric oxide release, and accelerating tissue repair – mechanisms that enhance blood vessel function and recovery
- › Combining gentle heat exposure, proper sodium-potassium balance, and regular movement builds stronger arteries, steadier blood pressure, and long-term cardiovascular resilience

High blood pressure is a dangerous condition that often goes unnoticed until it causes serious harm. It develops quietly, putting constant strain on your arteries, heart, and brain long before symptoms appear. That hidden pressure gradually stiffens blood vessels and forces your heart to work harder, creating the foundation for heart attack, stroke, and cognitive decline.

Many people assume that feeling "fine" means they're in the clear, only to find out later that their blood pressure has been elevated for years. The truth is, high blood pressure doesn't wait for dramatic warning signs — it typically builds slowly. Nearly half of adults in the U.S. live with it, but only a fraction keep it under control.¹

What makes this so important is that your vascular system is dynamic — it changes with the right input. The same body that develops stiff arteries can also restore flexibility when given the right conditions. That's why research into heat-based therapies is worth attention.

It shows that something as simple as raising your body temperature through safe, controlled heat exposure improves how your blood vessels function and eases the pressure placed on your heart. This isn't about quick fixes or gadgets — it's about teaching your cardiovascular system to respond better, recover faster, and perform the way it's designed to.

Heat Therapy at Home Works Like Exercise for Your Heart

A study published in the *Journal of Applied Physiology* investigated whether simple, home-based heat therapy could lower **blood pressure** and improve blood vessel function in older adults.² The study followed 19 participants — men and women with an average age of 67 — over eight weeks.

They used heated pants connected to a portable water circulator four times a week, for 60 minutes per session. The device pumped water heated to about 124 degrees F (51 degrees C) through tubing that warmed their legs, while a control group used the same setup with water at a neutral 88 degrees F (about 31 degrees C).

- **Older adults who used heat therapy had drops in blood pressure and improved circulation** — Those in the heat group saw their daytime systolic blood pressure — the upper number on a blood pressure reading — drop by an average of 5 mm Hg. That's a small number with big consequences.

Even a 5 mm Hg reduction cuts the risk of major heart events like stroke or heart attack by roughly 10%. They also showed enhanced endothelial function, meaning the inner lining of their arteries became more responsive and flexible. This improved function helps your arteries widen more easily, which reduces strain on the heart.

Many older adults hesitate to exercise because of joint pain or fatigue, and this approach gave them a safe, convenient way to get some of the same cardiovascular benefits, without movement, equipment, or gym membership. Compliance was remarkable: participants completed every session, a rare outcome in intervention trials.

- **Blood pressure dropped in as little as eight weeks, and vessel health improved steadily** – The researchers measured blood pressure and vascular function at multiple intervals and saw consistent improvements throughout the trial.

The most significant changes occurred after the full eight weeks, showing that benefits build gradually as the body adapts to repeated heating. These improvements lasted beyond each session, suggesting cumulative effects rather than temporary relaxation.

- **Circulation improved through the same biological pathway triggered by exercise** – Heat exposure increased shear stress – the friction of blood flowing against vessel walls – which stimulates the release of nitric oxide, a gas that relaxes and widens arteries.

Nitric oxide acts like a natural vasodilator, helping blood move smoothly and delivering oxygen more efficiently throughout your body. This mechanism explains why heat therapy mimics the vascular effects of moderate exercise, even though participants stayed seated during treatment.

- **The heart responded to heat by working smarter, not harder** – During sessions, participants' heart rates increased slightly, similar to what happens during brisk walking. However, because blood vessels were dilated, the heart pumped more

efficiently, moving greater volumes of blood without excessive pressure. This mild cardiovascular "workout" trains your heart to handle stress better over time, just as regular aerobic exercise would, but without physical exertion.

Hot Water Immersion Boosts Heart and Immune Health

In a related study published in the American Journal of Physiology, scientists compared how different types of heat exposure – traditional dry saunas, far-infrared saunas, and hot water immersion – affect the cardiovascular and immune systems.³ The goal was to see which form of passive heating most effectively increases blood flow, lowers blood pressure, and activates beneficial immune pathways.

Twenty healthy adults participated, each completing three sessions in randomized order, one for each heat method. Each session involved 45 minutes of exposure to one of the three heating methods, followed by a recovery period to measure changes in heart rate, core temperature, and blood pressure. The results were clear: hot water immersion raised the body's core temperature the highest, producing stronger and longer-lasting cardiovascular effects compared to both sauna types.

- **Hot water immersion lowered blood pressure more dramatically than saunas –** Mean arterial pressure – a measure of overall blood flow resistance – dropped by 14 mm Hg after hot water immersion, compared with smaller reductions in the sauna conditions. In other words, the simple act of sitting in a **hot bath** produced measurable heart health benefits equivalent to those gained from moderate-intensity exercise.
- **Heart rate and circulation responded like they would during a brisk walk –** During the hot water session, participants' heart rates increased from about 70 beats per minute to nearly 110, which mimics the response seen in light to moderate exercise. This rise wasn't due to stress – it was a sign that blood vessels were widening and the heart was pumping more efficiently.

- **The immune system showed powerful short-term activation** – The study revealed that hot water immersion boosted levels of a signaling molecule that triggers the release of anti-inflammatory agents and helps regulate immune response. It also increased the activity of two types of white blood cells responsible for targeting viruses and damaged cells.
- **Hot water immersion triggered unique physiological stress that built resilience** – The combination of hydrostatic pressure (the force of water against your body), heat, and mild cardiovascular demand created what scientists call "thermal exercise." This type of controlled stress trains your body to adapt, improving blood vessel elasticity, fluid regulation, and heat tolerance over time.

For people who can't perform regular exercise due to pain or illness, this kind of conditioning offers an alternative way to keep your circulatory system strong. As body temperature rose, endothelial cells – the thin lining inside blood vessels – released nitric oxide, helping to relax arteries and improve blood flow.

- **Hot water immersion offers systemic benefits** – While all three methods improved circulation to some degree, hot water immersion consistently produced the strongest increases in core temperature, heart rate, and immune markers.

This means you can use your bathtub as a powerful therapeutic tool. Regular hot baths help lower blood pressure, support healthy immunity, and mimic the benefits of physical activity for those who struggle to exercise.

Near-Infrared Sauna Therapy Takes Heat Training to the Next Level

While the American Journal of Physiology study compared traditional and far-infrared sauna therapy to hot water immersion, another approach – [near-infrared sauna therapy](#) – builds on those findings by combining heat exposure with exercise.

This practice uses radiant light to raise body temperature and stimulate the same cardiovascular benefits seen in heat therapy for blood pressure, but with added cellular repair and recovery advantages. Athletes and health enthusiasts are increasingly using infrared heat during workouts to enhance circulation, boost endurance, and accelerate recovery time.

- **Not all infrared is the same – near-infrared works deeper** – Infrared light is divided into near-, mid-, and far-infrared wavelengths, each with unique effects on your body. Near-infrared light penetrates several inches into tissue, reaching blood vessels and mitochondria – the energy-producing structures in your cells.

There, it activates photobiomodulation, a natural process that improves how your cells produce energy, release nitric oxide, and repair themselves.⁴ Far-infrared, by contrast, primarily warms the surface of your skin and promotes sweating but doesn't reach deep enough to stimulate these regenerative pathways.

- **Near-infrared boosts nitric oxide and mitochondrial performance – the same pathways linked to lower blood pressure** – The mechanism that makes near-infrared so powerful mirrors the one seen in heat therapy research: increased nitric oxide production. This molecule relaxes arteries, improves oxygen delivery, and enhances blood vessel flexibility.

Meanwhile, near-infrared light improves energy metabolism at a cellular level. The result is more efficient cardiovascular function, reduced fatigue, and faster tissue recovery after stress – effects that complement the vascular benefits of hot water immersion and sauna therapy.

- **Infrared heat strengthens training adaptations and speeds recovery** – Exercising in near-infrared heat creates a mild, controlled stress response that reinforces cardiovascular and muscular adaptation.

It improves oxygen use, increases endurance, and supports muscle growth through pathways that include mTOR and heat shock proteins – molecules that repair microscopic muscle damage and reduce soreness.⁵ This combination of movement

and thermal conditioning mimics the "cardio effect" of heat therapy, offering an efficient way to build resilience, balance inflammation, and accelerate repair between workouts.

- **Choose near-infrared over commercial far-infrared saunas for real results** – Most commercial "infrared" saunas rely on far-infrared emitters or weak near-infrared LEDs, which generate surface heat but not enough irradiance – the power needed to activate true photobiological effects.

For meaningful results, near-infrared exposure should come from high-irradiance red-filtered incandescent bulbs that deliver full-spectrum, natural light while minimizing electromagnetic field (EMF) exposure. These can be easily built into a home sauna setup for safe, affordable, full-body therapy that supports heart health, recovery, and long-term vitality.

The Best Way to Monitor Your Sauna Session

While sauna room temperature and session duration are useful starting points, the most accurate way to optimize your sauna session is to monitor your actual core body temperature using an oral digital thermometer. This personalized approach accounts for individual variations in heat tolerance, body composition, and acclimation status.

Research shows that the therapeutic benefits of sauna – including heat shock protein activation, cardiovascular improvements, and enhanced recovery – are triggered when your core body temperature rises to specific thresholds, not simply by the room temperature or time spent inside.

Since individual responses to heat vary significantly based on factors like body mass, hydration status, fitness level, and heat acclimation, using a thermometer gives you direct feedback on what matters most: your body's actual response.

- **Target temperature guidelines** – Using an oral digital thermometer:

- **Beginner target** – Work toward reaching an oral temperature of 100 degrees F (37.8 degrees C)
- **Optimal target** – Gradually progress to 101 degrees F (38.3 degrees C) for maximum heat shock protein activation
- **Do not exceed** – 101.5 degrees F oral temperature (38.6 degrees C)

Important note on oral vs. core temperature – Oral temperature typically reads approximately 0.5 degrees F to 1 degrees F (0.3 degrees C to 0.5 degrees C) lower than true core (rectal) temperature. An oral reading of 101 degrees F corresponds to a core temperature of approximately 101.5 degrees F to 102 degrees F (38.6 degrees C to 38.9 degrees C) – the range research associates with robust heat shock protein induction and therapeutic benefits.

- **How to use this method:**

1. **Take your baseline** – Before entering the sauna, record your oral temperature (typically 97.5 degrees F to 98.6 degrees F/36.4 degrees C to 37 degrees C).
2. **Check periodically** – Keep thermometer out of the sauna as it will prolong its life and give you better measurements. After 10 to 15 minutes in the sauna, or as soon as you feel hot, measure your temperature. Be sure to put thermometer outside the sauna after measuring your temperature.
3. **Track your progress** – First few weeks: Exit when you reach 100 degrees F (37.8 degrees C). After acclimation (2 to 4 weeks of regular use): You may extend sessions until reaching 101 degrees F (38.3 degrees C). Never exceed 101.5 degrees F oral temperature.
4. **Listen to your body** – If you feel dizzy, nauseous, or unwell at any temperature, exit immediately regardless of the thermometer reading.

- **The science behind these numbers:**

- Heat shock proteins (HSPs) are activated when core temperature reaches approximately 38.5 degrees C (101.3 degrees F) or higher
- Research shows that time spent with core temperature ≥ 38.5 degrees C correlates with greater HSP72 mRNA expression
- Core temperatures above 39.4 degrees C (103 degrees F) approach hyperthermia risk territory
- The 101 degrees F to 101.5 degrees F oral target keeps you in the therapeutic zone while maintaining a safety margin
- **Why this beats room temperature alone** – A 175 degrees F traditional sauna may raise one person's core temperature to 101 degrees F in 15 minutes while taking another person 25 minutes to reach the same point. Similarly, a 140 degrees F infrared sauna session may be perfectly adequate for one person while insufficient for another. Your oral thermometer tells you what's actually happening in your body.

Quick Reference Summary

| Parameter | Guideline |
|--------------------|---------------------------------------|
| Measurement tool | Oral digital thermometer |
| Beginner target | 100 degrees F (37.8 degrees C) oral |
| Optimal target | 101 degrees F (38.3 degrees C) oral |
| Maximum safe limit | 101.5 degrees F (38.6 degrees C) oral |
| Thermometer | Keep outside of sauna |

- **Scientific references supporting these recommendations:**

1. Gibson et al. found that rectal temperature ≥ 38.5 degrees C correlates with greater heat shock protein (Hsp72) mRNA induction
2. A 30-minute sauna session at 80 degrees C increases rectal temperature by approximately 0.9 degrees C in adults (PubMed: 3218894)
3. Heat therapy research indicates core temperatures above 40 degrees C (104 degrees F) risk hyperthermia
4. Oral temperature typically reads 0.3 degrees C to 0.5 degrees C lower than rectal temperature (NCBI NBK562334)
5. Heat shock protein activation threshold documented at approximately 39 degrees C/102.2 degrees F core temperature

How to Use Heat to Lower Blood Pressure and Strengthen Your Heart

Your blood vessels respond best to steady, predictable input – not sudden extremes. When you expose them to gentle, consistent heat, they relearn how to expand and contract with ease. That's how heat therapy targets one root cause of high blood pressure: stiff, unresponsive arteries that make your heart work harder than it should. You don't need special equipment or a trip to the spa to do this. All it takes is warm water, radiant heat, time, and a bit of intention.

That said, heat therapy isn't the only piece of the puzzle. True **cardiovascular health** depends on how you move, eat, rest, and recover. Think of heat exposure as one powerful tool in a broader routine – something that supports, but doesn't replace, the **daily habits** that keep your heart strong and your blood pressure steady. Here's how to make it part of your routine.

1. **Start with shorter sessions and work your way up** – If you're new to hot water or infrared therapy, begin with 10 to 15 minutes to let your body adjust. Ease in slowly, and extend your sessions as your body adapts. Most people benefit from 20 to 30

minutes of infrared therapy. More time isn't necessarily better. The goal isn't to push your limits – it's to train your cardiovascular system through repetition.

Consistency, not intensity, creates lasting change.

- 2. Use warm – not scalding – water** – Comfort is key when it comes to warm baths. If the water stings, burns, or turns your skin bright red, it's too hot. Aim for a temperature between 100 degrees F and 104 degrees F. If you're prone to flushing, itchiness, or heat rashes, keep your chest and face out of the water. This moderate warmth is enough to boost circulation and improve vessel flexibility without overstressing your body. Think of it as a gentle stimulus, not a test of endurance.
- 3. Alternate between bath and sauna therapy for greater benefit** – Very hot water dries out your skin, alters its pH, and disrupts your skin microbiome, especially if you have eczema, rosacea, or sensitive skin. If hot baths are too harsh for your skin, [sauna therapy](#) offers a great alternative.

It delivers many of the same heart and immune benefits without prolonged water exposure. Start low – around 120 degrees F – and increase gradually as you get used to it. Two to four sessions per week are plenty for most people. Combining both forms – baths for circulation and near-infrared light for mitochondrial repair – offers the broadest benefit.

- 4. Lock in moisture right after each session** – Heat strips natural oils from your skin and causes fluid loss through sweat. Rehydrate by drinking mineral-rich water and apply organic coconut oil afterward to seal in moisture. It helps restore your skin barrier and prevents dryness while you strengthen your heart from within.
- 5. Balance your sodium and potassium for stronger blood pressure control** – Heat therapy helps improve circulation, but healthy blood pressure also depends on what's on your plate. Most Americans consume nearly twice as much sodium as potassium, even though your body functions best with the opposite ratio. Processed foods account for roughly 70% of sodium intake, making it easy to overload without realizing it.⁶

To support vascular health, aim for about 3,500 milligrams (mg) of sodium per day from natural, unprocessed foods, along with 3,400 to 5,000 mg of potassium from whole foods like spinach, beet greens, and oranges. Potassium helps your body flush out excess sodium, balances fluid levels, and lowers hormones that tighten arteries. Your [sodium-potassium ratio](#) – not sodium alone – is one of the most powerful levers you have for steady, healthy blood pressure.

FAQs About Heat Therapy for Healthy Blood Pressure

Q: How does heat therapy lower blood pressure?

A: Heat therapy works by gently raising your body temperature, which increases blood flow and improves the flexibility of your arteries. This heat exposure creates shear stress – the friction of blood moving along vessel walls – that triggers the release of nitric oxide, a molecule that relaxes and widens arteries. Over time, this process retrains your cardiovascular system to work more efficiently, reducing overall blood pressure without medication or intense exercise.

Q: What's the difference between hot-water therapy, traditional saunas, and near-infrared saunas?

A: Hot-water immersion and traditional or far-infrared saunas improve blood pressure by increasing core temperature and promoting vessel dilation. Near-infrared therapy goes deeper – it activates mitochondrial energy production and nitric oxide release at a cellular level, which enhances both vascular function and recovery. Together, these methods create a comprehensive system for improving heart and immune health.

Q: How long and how often should I use heat therapy?

A: Start with 10 to 15 minutes per session to allow your body to adapt, and gradually build up to 20 to 30 minutes, three to four times per week. Whether you use a warm bath or sauna, the key is consistency – regular exposure leads to cumulative benefits for heart health, circulation, and blood pressure regulation.

Q: Is near-infrared safer or more effective than far-infrared?

A: Yes, for most therapeutic purposes. Near-infrared penetrates deeper into tissue, reaching blood vessels and mitochondria to activate cellular repair and energy production. Most commercial "full-spectrum" saunas rely on far-infrared or weak LEDs that only warm the surface. Look for high-irradiance incandescent bulbs that emit natural-spectrum near-infrared light with minimal EMF exposure.

Q: Besides heat therapy, what else helps regulate blood pressure naturally?

A: Heat therapy is one part of the solution, but diet and lifestyle still matter. Most Americans consume nearly twice as much sodium as potassium, even though optimal blood pressure requires the reverse ratio.

Aim for about 3,500 mg of sodium and 3,400 to 5,000 mg of potassium daily from whole foods like spinach, beet greens, and oranges. Balancing these minerals helps your body eliminate excess sodium, regulate fluid levels, and keep your arteries relaxed. Together with consistent heat therapy, this approach supports stronger, more flexible blood vessels and long-term cardiovascular health.

Sources and References

- ¹ [U.S. CDC January 28, 2025](#)
- ² [Journal of Applied Physiology 2025 Mar 10;138\(4\):979-987](#)
- ³ [American Journal of Physiology Volume 329, Issue 1](#)
- ⁴ [Journal of Translational Medicine Volume 21, Article number: 135 \(2023\)](#)
- ⁵ [Frontiers in Sports and Active Living March 3, 2025, 7:1462901](#)

- ⁶ U.S. FDA, Sodium Reduction in the Food Supply, November 1, 2024