

High Blood Pressure can be Lower Down by Hot Bath

Researchers conducted a narrative review of the existing scientific evidence on the hypotensive benefits of hot water immersion and published their findings, concluding that while the [therapy](#) shows promise, important evidence gaps remain.



Study

Hot water immersion or bathing is a form of passive heat therapy that has been practiced as a healing modality for many centuries. It typically involves bathing in water heated to 39–40°C, while [thermoneutral temperatures](#) range from 33–37°C.

The practice of hot water immersion spans cultures and centuries, from Japanese onsen and Turkish hammams to Roman thermae and Nordic geothermal springs. These traditions have consistently centered on healing, [relaxation](#), and communal wellness.

Japanese research has reported that frequent bathing is associated with a reduced risk of high blood pressure and a roughly 28 % lower risk of cardiovascular disease, though these findings are observational and do not prove causation. The therapeutic benefits stem from the rise in core body temperature and the resulting [physiological responses](#), which closely mirror those triggered by exercise.

Early research has shown that 15–30 minutes of hot bathing at 40.5–43°C increases core temperature to 40°C, elevates heart rate to 160 beats per minute, and lowers systolic [blood pressure](#) to as low as 60 mmHg.

Findings

Hot water immersion produces immediate effects on blood pressure via multiple [vascular mechanisms](#). Blood vessels dilate, skin blood flow increases, and overall vascular resistance decreases, temporarily lowering arterial pressure. These changes create friction along vessel walls, known as shear stress, which triggers beneficial adaptations.

A single 40°C immersion has been shown in at least one acute study to improve [blood vessel](#) dilation more than thermoneutral immersion at 36°C, while 34°C water shows no benefit over ambient air, suggesting temperature is likely an important contributor.

However, in clinical populations with [type 2 diabetes](#) or peripheral arterial disease, repeated hot water immersion lowers blood pressure and heart rate without improving vessel dilation, possibly

because diseased vessels are less adaptable. This suggests improved endothelial function may not be required for blood pressure benefits.

Cardiac output can double as blood flow to the skin increases, creating heightened shear stress on blood vessel walls, partly driven by elevated [heart rate](#). Blood shifts toward the skin for cooling, fluid moves into tissues, and sweating depletes plasma volume, which would normally reduce the blood returning to the heart and decrease stroke volume. However, water immersion uniquely applies hydrostatic pressure that aids venous return and maintains stroke volume.

Hot water immersion stimulates factors that promote new blood vessel growth, driven by increased tissue temperature and vascular shear stress. Vascular endothelial growth factor (VEGF) increases by roughly 60 % after 12 weeks of immersion and triggers nitric oxide production, which lowers blood pressure. Blocking VEGF in humans raises systolic and diastolic pressure by approximately 12 and 10 mmHg, respectively. Interestingly, [blood serum](#) from adults after 8 weeks of immersion stimulated vessel growth in laboratory studies even without increased VEGF, suggesting other growth factors may independently drive this process through nitric oxide pathways.

The sustained elevation in core and muscle temperatures may confer additional benefits, including skeletal muscle adaptations such as increased mitochondrial density and capillarization, as well as hematological changes such as expanded plasma and [blood volume](#). These adaptations likely contribute to, rather than fully explain, previously observed improvements in cardiorespiratory fitness and may also contribute to reduced blood pressure.

Beyond these immediate effects, immersion activates the autonomic nervous system and triggers kidney and hormonal responses that may sustain long-term reductions in blood pressure. With repeated sessions, the body produces more nitric oxide, bolsters antioxidant defenses, and enhances [parasympathetic nervous system](#) activity, the calming branch of the nervous system. These changes reduce oxidative stress-induced cellular damage and improve vascular function, yielding sustained reductions in resting blood pressure.

Hot water immersion triggers hormonal responses similar to those triggered by exercise. The hormone aldosterone drops during immersion but rises sharply afterward. With repeated exposure over 5 days, [aldosterone levels](#) remain elevated, suggesting that the body becomes more heat-responsive, as blood volume increases after repeated exercise. Total protein content in the blood also increases over 5 days, helping the body retain the expanded blood volume that comes with heat adaptation.

However, most repeated-exposure studies to date have been small and have not used 24-hour [ambulatory blood](#) pressure monitoring, the gold-standard method for assessing sustained blood pressure change, limiting confidence in long-term effects.

Some studies have also reported similar 24-hour reductions in blood pressure following thermoneutral immersion, suggesting that factors beyond water temperature alone, including [hydrostatic pressure](#), relaxation responses, or the contextual effects of bathing, may contribute to the observed benefits.

Conclusion

Hot water immersion shows promise for hypertension management, though optimal dosing and individual response patterns remain unclear. While longer sessions produce greater acute reductions in blood pressure during immersion, the long-term effects are inconsistent and may vary depending on the [measurement](#) method and the population studied.

Older adults and those with treated hypertension appear to show more consistent benefits, while young, [healthy individuals](#) and those with untreated hypertension demonstrate mixed or minimal effects across studies, with some rigorous trials showing no sustained ambulatory blood pressure reduction.

More research is needed to identify which populations benefit most, clarify underlying mechanisms, and determine the durability of effects using [gold-standard](#) blood pressure measurement techniques.

Source:

<https://www.news-medical.net/news/20260212/Can-hot-baths-lower-high-blood-pressure.aspx>