

Impact of Acupressure on Blood Pressure and Physiological Stress Responses

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Abstract

Blood pressure and physiological stress responses are closely influenced by autonomic activity, emotional state, environmental demands, and underlying health conditions. Persistent elevation of blood pressure and repeated stress responses may contribute to cardiovascular risk and reduced well-being. Acupressure is a non-invasive complementary intervention involving manual stimulation of selected points and has been investigated as a possible method for regulating blood pressure and stress-related physiological responses. This review examines the impact of acupressure on blood pressure and physiological stress responses, focusing on possible mechanisms, commonly studied acupoints, evidence from randomized controlled trials and systematic reviews, changes in pulse and autonomic measures, safety, and research limitations. Available evidence suggests that some acupressure protocols may reduce systolic and diastolic blood pressure, particularly among people with hypertension, and may improve stress-related outcomes. A 2023 randomized trial in older adults with essential hypertension reported significant improvements in blood pressure, pulse rate, stress index, and sleep efficiency following eight weeks of auricular acupressure. A systematic review of acupressure for hypertension also reported reductions in blood pressure across nine eligible studies. However, other randomized evidence has found no significant effects on hemodynamic measures, indicating that results are not uniform. Acupressure should therefore be considered a complementary approach and not a substitute for medical treatment of hypertension.

Keywords

Acupressure; Blood Pressure; Physiological Stress; Hypertension; Heart Rate; Autonomic Regulation; Complementary Therapy

Introduction

Blood pressure is a major indicator of cardiovascular health and is influenced by vascular, neural, hormonal, behavioural, and psychological factors. Stress can activate the sympathetic nervous system and other physiological pathways, producing temporary changes in heart rate, blood pressure, respiration, and other bodily responses. When stress is persistent or combined with other risk factors, it may contribute to poorer cardiovascular health.

Management of elevated blood pressure commonly involves lifestyle modification, pharmacological treatment, and regular clinical monitoring. Complementary non-pharmacological approaches may be considered as supportive measures, particularly when they are safe and do not interfere with established care. Acupressure has attracted attention because it is non-invasive and can be delivered by a practitioner or, for selected protocols, taught for self-application.

Evidence concerning blood pressure is encouraging but mixed. A 2023 systematic review identified nine eligible intervention studies and reported that acupressure at points including Taichong (LR3), Shenmen (HT7), and Taixi (KI3) was associated with reductions in blood pressure, with intervention durations ranging from 3 to 40 minutes.

□cite□turn0search2□ A randomized controlled trial involving 91 people with essential hypertension also reported that PC6 acupressure supported blood-pressure regulation.

□cite□turn1search0□

Evidence concerning physiological stress responses is similarly varied. An eight-week randomized sham-controlled study in older adults with essential hypertension found significant differences in systolic and diastolic blood pressure, pulse rate, stress index, and sleep efficiency, although the Pittsburgh Sleep Quality Index did not differ significantly. □cite□turn1search2□ By contrast, another randomized trial found no significant effects of acupressure on systolic blood pressure, diastolic blood pressure, mean arterial pressure, or pulse following coronary angiography, despite a reduction in pain. □cite□turn1search1□

This review examines the impact of acupressure on blood pressure and physiological stress responses. It considers the concept of acupressure, possible mechanisms, evidence for blood-pressure regulation, effects on stress and autonomic measures, clinical applications, safety, limitations, and future research needs.

1. Blood Pressure and Physiological Stress

Blood pressure reflects the interaction of cardiac output, vascular resistance, circulating volume, and neurohormonal regulation. Stress can temporarily increase sympathetic activity and alter cardiovascular parameters such as heart rate and blood pressure. Measures such as pulse rate, heart rate variability, and subjective or physiological stress indices can therefore provide complementary information about the body's response to stress.

Because blood pressure naturally varies with posture, activity, medication, time of day, and emotional state, repeated measurements under standardized conditions are important when evaluating interventions.

2. Concept and Principles of Acupressure

Acupressure involves controlled manual stimulation of selected points on the body. It is historically related to traditional East Asian medicine and is conceptually related to acupuncture, although it does not use needles. Protocols may involve finger or thumb pressure, massage, or adhesive pressure devices.

Research protocols vary in acupoint selection, pressure intensity, duration, frequency, and treatment period. These differences can influence outcomes and make direct comparison between studies difficult.

3. Possible Mechanisms of Cardiovascular and Stress Regulation

Several mechanisms have been proposed to explain the effects of acupressure on cardiovascular and stress-related responses. Sensory stimulation may influence autonomic nervous system activity and pain or stress processing. Relaxation may reduce sympathetic arousal and support a shift toward parasympathetic activity.

These mechanisms remain partly theoretical for acupressure. Physiological measures such as heart rate, heart rate variability, blood pressure, and stress indices can help determine whether changes are accompanied by measurable autonomic effects.

4. Effect on Systolic and Diastolic Blood Pressure

Evidence from clinical studies suggests that acupressure may reduce blood pressure in some populations. A 2023 systematic review of nine studies reported that several acupressure protocols were associated with reductions in blood pressure, including protocols using LR3, HT7, and KI3. The review noted treatment durations ranging from 3 to 40 minutes and suggested that repeated treatment over several weeks may be relevant to sustained effects. [cite\turn0search2]

A randomized controlled trial of 91 people with essential hypertension found that PC6 acupressure was associated with blood-pressure regulation compared with placebo treatment. [cite\turn1search0]

However, the evidence should not be interpreted as proof that acupressure can replace antihypertensive treatment. Blood pressure outcomes can vary according to baseline hypertension, medication use, intervention duration, and measurement procedures.

5. Effect on Heart Rate and Autonomic Responses

Heart rate and heart rate variability are commonly used indicators of cardiovascular and autonomic function. A randomized study of older adults with essential hypertension found significant differences in pulse rate after auricular acupressure compared with sham treatment. [cite\turn1search2]

Evidence for HRV is less consistent. A randomized controlled trial involving 150 hypertensive patients found improvements in selected quality-of-life domains but no significant between-group differences in HRV parameters, heart rate, or blood pressure.

These findings indicate that physiological responses may not change uniformly across all measures.

6. Acupressure and Physiological Stress Responses

Stress responses may be evaluated using subjective stress scales as well as physiological indicators such as heart rate, blood pressure, HRV, and, in some studies, biochemical measures. Acupressure may influence stress through relaxation, sensory stimulation, and reduction of perceived discomfort.

The 2023 randomized sham-controlled study in older adults with essential hypertension found a significant difference in stress index after eight weeks of auricular acupressure, alongside improvements in blood pressure and pulse rate. [citeTurn1search2]

Evidence from a broader meta-analysis of 27 randomized studies indicates that acupressure can reduce anxiety, but the authors reported very high heterogeneity between studies. This suggests that psychological effects may be promising while still requiring cautious interpretation. [citeTurn0search0]

7. Clinical Applications and Patient Populations

Acupressure has been investigated among individuals with essential hypertension, older adults, patients undergoing medical procedures, and other groups experiencing stress-related symptoms. The clinical context appears important because the intervention may have different effects when elevated blood pressure is chronic compared with when changes are primarily caused by acute procedural anxiety.

For example, a randomized study among coronary angiography patients found no significant hemodynamic effects even though pain was reduced, suggesting that an improvement in subjective symptoms does not necessarily produce measurable changes in blood pressure or pulse. [citeTurn1search1]

Accordingly, acupressure may be most appropriately viewed as a supportive intervention that can be integrated with lifestyle modification, prescribed medication, stress management, and routine blood-pressure monitoring.

8. Safety and Practical Considerations

Acupressure is generally non-invasive, but it should be applied appropriately. Excessive pressure may cause local discomfort, tenderness, or skin irritation. Individuals with cardiovascular disease or hypertension should not discontinue prescribed medicines or alter treatment on the basis of acupressure alone.

Blood pressure should be measured using appropriate equipment and standardized procedures. Acupressure should not delay medical evaluation when blood pressure is severely elevated or when symptoms suggest an acute cardiovascular or neurological problem.

9. Limitations of Current Evidence and Future Research

Current evidence has several limitations. Studies differ in participant characteristics, acupoints, pressure techniques, treatment duration, control groups, and outcome measures. Some studies are relatively small, while meta-analyses have reported substantial heterogeneity. The anxiety literature, for example, showed very high statistical heterogeneity despite an overall beneficial effect. □cite□urn0search0□

Future research should use larger randomized controlled trials, standardized acupressure protocols, credible sham controls, repeated blood-pressure measurements, and objective physiological measures such as HRV where appropriate. Researchers should also examine whether changes in blood pressure are sustained after treatment ends and whether acupressure provides clinically meaningful benefits beyond relaxation and contextual effects.

Conceptual Framework

The following framework presents a simplified pathway through which acupressure may influence blood pressure and physiological stress responses. Baseline cardiovascular status, stress level, treatment duration, acupoint selection, and adherence may modify the observed effects.

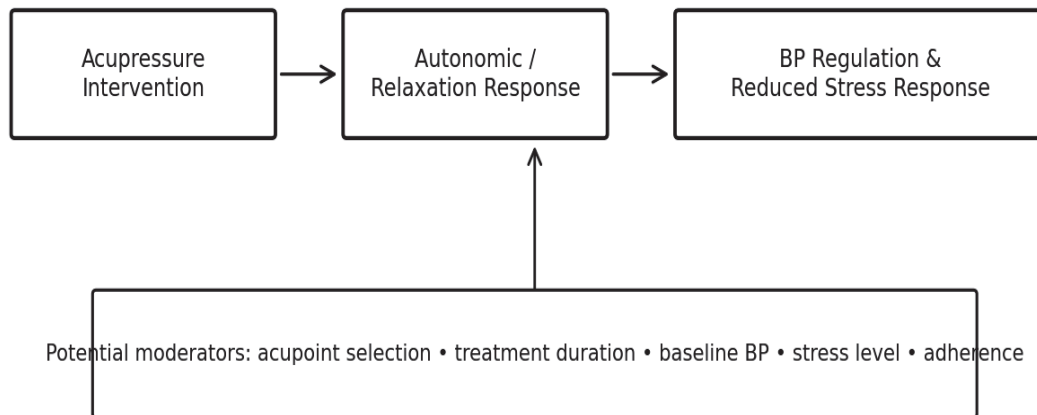


Figure 1. Conceptual framework for the potential relationship between acupressure, blood-pressure regulation, and physiological stress responses.

Conclusion

Acupressure shows potential as a complementary approach for supporting blood-pressure regulation and reducing physiological or perceived stress in selected populations. Evidence from systematic reviews and randomized trials suggests that some protocols may reduce systolic and diastolic blood pressure and improve stress-related measures. At the same time, other controlled research has found no significant effects on hemodynamic measures, indicating that the response is not consistent across settings.

The most appropriate role of acupressure is therefore as an adjunct to established cardiovascular and stress-management care. It may support relaxation and symptom management, but it should not replace prescribed antihypertensive medication, clinical monitoring, or professional medical assessment.

Further research with standardized protocols, objective physiological measures, larger samples, and longer follow-up is needed to establish the magnitude and durability of acupressure's effects on blood pressure and physiological stress responses.

References

- Au, D. W. H., Tsang, H. W. H., Ling, P. P. L., Leung, C. H. T., Ip, P. K., & Cheung, W. M. (2015). Effects of acupressure on anxiety: A systematic review and meta-analysis. *Acupuncture in Medicine*, 33(5), 353–359. <https://doi.org/10.1136/acupmed-2014-010720>
- Chen, S.-R., et al. (2015). Auricular acupressure relieves anxiety and fatigue, and reduces cortisol levels in post-caesarean section women: A single-blind, randomised controlled study. *International Journal of Nursing Studies*, 52(8), 1262–1272. <https://doi.org/10.1016/j.ijnurstu.2015.10.006>