

## Effect of Structured Nadi Shodhana Pranayama and Swasthavritta-Based Lifestyle Modification in Stage 1 Essential Hypertension: A Case Report

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### Abstract

One important modifiable risk factor for cardiovascular morbidity worldwide is stage 1 essential hypertension. The first line of treatment should be non-pharmacological. Vascular tone and autonomic balance may be enhanced by yogic breathing practices and lifestyle changes based on Swasthavritta.

A 42-year-old male with newly diagnosed Stage 1 hypertension (mean baseline BP 136/86 mmHg) was enrolled. The baseline waist circumference was 98 cm and the BMI was 27.4 kg/m<sup>2</sup>. The patient complained of excessive salt intake, erratic sleep patterns, and significant perceived stress.

For 12 weeks, structured Nadi Shodhana pranayama (20 minutes per day) was combined with lifestyle counselling based on Swasthavritta.

SBP dropped 12 mmHg and DBP dropped 8 mmHg at 12 weeks. Between 84 and 72 beats per minute, the resting pulse rate dropped. Both the stress score and the quality of sleep considerably improved.

Clinically significant BP reduction was shown by structured pranayama in conjunction with lifestyle modification, indicating autonomic modulation as a likely mechanism.

**Key words :** Swasthavritta, Hypertension, Nadi Shodhana pranayama Yogic breathing.

One of the main causes of cardiovascular mortality worldwide is hypertension<sup>2</sup>. If left untreated, stage 1 hypertension (SBP 130–139 mmHg or DBP 80–89 mmHg) dramatically raises the risk of cardiovascular disease in the long run<sup>5</sup>. According to recent guidelines, changing one's lifestyle is the main treatment for early-stage illness.<sup>7</sup>

By increasing parasympathetic tone and decreasing sympathetic overactivity, yogic breathing techniques have been demonstrated to modify autonomic nervous system balance<sup>3</sup>. In Ayurveda, Swasthavritta outlines daily routines (Dinacharya) and behavioural regulation for the preservation of physiological balance. Nadi Shodhana pranayama, a controlled alternate nostril breathing technique, has been shown to lower blood pressure and stress indicators<sup>6</sup>.

Combining yoga breathing with lifestyle changes based on Swasthavritta may have a synergistic effect on the cardiovascular system.

The impact of a structured pranayama protocol in conjunction with lifestyle modification on a patient with Stage 1 essential hypertension is assessed in this case study.

#### *Case Presentation :*

A routine health examination revealed a series of high blood pressure readings in a 42-year-old male school teacher. He had no prior history of cardiovascular events, thyroid issues, diabetes, or renal problems. Baseline Clinical Data

Three blood pressure recordings were obtained on different days under standardized conditions.

Table-1. Baseline Clinical Parameters

Parameter	Value
Age	42 years
Sex	Male
Height	168 cm
Weight	77 kg
BMI	27.4 kg/m <sup>2</sup>
Waist Circumference	98 cm
Mean SBP (3 readings)	136 mmHg
Mean DBP (3 readings)	86 mmHg
Resting Pulse	84/min

#### Lifestyle Assessment

- Salt intake: Estimated 8–9 g/day
- Sleep duration: 5–6 hours (late-night screen exposure)
- Perceived stress score (0–10 scale): 8/10
- Physical activity: Sedentary (<3000 steps/day)
- No tobacco or alcohol use

The patient was newly diagnosed and not started on antihypertensive medication.

#### *Intervention Protocol :*

##### Yogic Protocol (12 Weeks)

- Nadi Shodhana Pranayama
  - 10 minutes
  - Twice daily
  - Initial 1:1 breathing ratio
- Deep breathing: 5 minutes
- Relaxation (Shavasana): 5 minutes

- Total duration: 20 minutes/day

#### Swasthavritta-Based Lifestyle Modification

- Salt restriction (<5 g/day)
- Early dinner before 8:00 PM
- Fixed wake time (5:45 AM)
- Avoidance of day sleep
- 30-minute evening walk
- Screen reduction after 9 PM

Compliance was monitored weekly through telephonic follow-up.

#### *Outcome Measures :*

- Weekly BP recordings (home digital monitor validated device)
- Follow-up at 4, 8, and 12 weeks
- Resting pulse rate
- Subjective stress score
- Sleep quality assessment (0–10 scale)

#### **Results**

Table-2. Blood Pressure Trend Over 12 Weeks

Time Point	SBP (mmHg)	DBP (mmHg)
Baseline	136	86
4 Weeks	130	84
8 Weeks	126	80
12 Weeks	124	78

Table-3. Secondary Outcomes

Parameter	Baseline	12 Weeks
Resting Pulse	84/min	72/min
Stress Score	8/10	3/10
Sleep Quality	4/10	8/10
Weight	77 kg	74 kg

Reduction in SBP: 12 mmHg

Reduction in DBP: 8 mmHg

No adverse events were reported.

This case illustrates how systematic pranayama and lifestyle changes can result in a clinically significant drop in blood pressure. A substantial decrease in cardiovascular risk is linked to a 10 mmHg drop in systolic blood pressure<sup>5</sup>.

The probable mechanism involves:

- Enhanced vagal tone
- Reduced sympathetic overactivity
- Improved baroreflex sensitivity
- Decreased peripheral vascular resistance<sup>3,6</sup>

Breathing slowly encourages autonomic balance and increases heart rate variability. Endothelial stress and vascular stiffness are further reduced by salt restriction and circadian adjustment<sup>4,7</sup>. Weight loss and stress management most likely worked in concert.

Internal validity is strengthened by regular weekly tracking, notwithstanding the limits of single-patient evidence.

Over the course of 12 weeks, Stage 1 essential hypertension patients' systolic and diastolic blood pressure significantly decreased when structured Nadi Shodhana pranayama was paired with a lifestyle modification based on Swasthavritta. This integrative method could be used as an early intervention technique or as a safe supplement.

It is advised to conduct more controlled research with a bigger sample size.

**Patient Perspective :**

The patient claimed more energy during the day, better sleep, and enhanced mental serenity. He conveyed his desire to keep up the breathing exercises in the long run.

**Ethical Clearance Statement :**

The intervention was carried out in compliance with the ethical standards of the institution. Patient privacy was upheld at all times.

**Informed Consent Statement :**

The patient gave written informed consent to participate and have their anonymised data published.

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