

***Yogasana* and *Ushnambupaan* in the Management of *Sthaulya* : A Randomized Controlled Clinical Trial**

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ABSTRACT

Sthaulya (obesity) is a growing global health concern. Despite multiple pharmacological and surgical options, many patients seek holistic and cost-effective approaches. Ayurveda and Yoga offer preventive and therapeutic strategies, particularly *Ushnambupaan* (lukewarm water intake) and *Yogasana* (therapeutic postures). The combined efficacy of these interventions, however, remains insufficiently evaluated in controlled trial settings.

To evaluate and compare the clinical efficacy of *Yogasana* combined with *Ushnambupaan* versus *Ushnambupaan* alone in the management of *Sthaulya* across anthropometric and subjective outcome parameters.

A randomized controlled clinical trial was conducted on 64 patients diagnosed with *Sthaulya* over 90 days. Participants were randomly divided into Group A (*Yogasana* + *Ushnambupaan*) and Group B (*Ushnambupaan* only). Outcome measures included body weight, BMI, waist-hip ratio, neck girth, and subjective symptoms – *Dourbalya*, *Dourgandhya*, *Swedabaddh*, *Kshudhatimatra*, and *Pipasatimatra*. Data were analysed using paired and unpaired t-tests.

Group A showed superior improvements across all parameters. Mean weight reduction was 3.56 kg in Group A versus 1.92 kg in Group B; BMI reduction was 1.30 versus 0.68 respectively. Subjective symptom scores also improved significantly more in Group A. All intergroup and intragroup differences were statistically significant ($p < 0.05$).

Yogasana as an add-on to *Ushnambupaan* provides clinically meaningful and statistically significant benefits in managing *Sthaulya*. This combination represents a sustainable, accessible, and non-pharmacological strategy for obesity management in Ayurvedic lifestyle principles.

Keywords: Obesity, Ayurveda, *Ushnambupaan*, Clinical Trial, Swasthavritta

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INTRODUCTION

Obesity, or *Sthaulya* in Ayurveda, has emerged as a pressing global health challenge in the era of globalization. According to the World Health Organization (WHO), obesity accounts for at least 2.8 million deaths annually.¹ Its prevalence has tripled since 1975, affecting 2.5 billion adults and 37 million children under five as of 2022. The WHO further projects that by 2025, 167 million individuals will face obesity-related complications.² From a modern biomedical perspective, obesity results from an energy imbalance, marked by excessive consumption of calorie-dense foods and reduced physical activity. This lifestyle shift has led to an increase in chronic non-communicable diseases (NCDs), including diabetes, cardiovascular diseases, and certain cancers.

In Ayurvedic literature, *Sthaulya* is described as a *Santarpanjanya Vyadhi* a disorder caused by over-nutrition and is listed among the *Ashtau Nindita Purusha* by *Acharya Charaka*.³ The condition manifests as excessive accumulation of *Meda Dhatu*, particularly in the *Sphika* (hips), *Udara* (abdomen), and *Stana* (chest), often leading to low energy and a pendulous body frame.⁴ Ayurveda proposes a holistic lifestyle-based approach to health through *Dinacharya*,

(Daily regime) *Rutucharya* (Seasonal regime), *Trayopastambha - Aahar, Nidra Brhamacharya* (The three sub-pillars - Food, Sleep and Celibacy), and *Sadavritta* (ethical conduct). Within this framework, *Yoga* serves as a vital tool for physical and mental well-being. Specifically, *Ashtanga Yoga*, this *yoga* practice is not something Sage Patanjali laid foundation about, or conventional yoga practice. But a modern adapted yoga practiced exclusively in Southern India, known for its dynamic flow of postures (*Asanas*) and breathwork (*Pranayama*), supports cardiovascular health, improves metabolic function.

Ushnambupaan, or the intake of lukewarm water, is a traditional Ayurvedic intervention described as *Vatahara* (Vata-pacifying), *Kaphahara* (Kapha-pacifying), *Medohara* (Meda pacifying), and *Basti Shodhana*. (bladder cleansing) It aids digestion, clears *Ama* (undigested food or toxin) and *Mala* (waste products) and restores balance in *Srotasa*. (body channels) By improving *Agni* (digestive fire) and cleansing the microchannels, it promotes healthy fat metabolism and prevents the further accumulation of *Meda*. (fat)⁵

Modern lifestyles have reduced physical activity and increased consumption of energy-dense food, creating a need for affordable, sustainable interventions. This

study evaluates the combined effect of *Yogasana* and *Ushnambupaan*, compared with *Ushnambupaan* alone, in the management of *Sthaulya*, providing scientific evidence to support the integration of Ayurvedic and yogic strategies in clinical obesity care.

MATERIALS AND METHODS

Study Design and Duration

A prospective randomized controlled clinical trial was conducted over 90 days and registered with the Clinical Trials Registry of India (CTRI). CTRI/2024/08/072290 dated -1/1/24. Ethics approval (Letter No.: RSTH/PG/IEC/692/2024 Date of Approval: 14/09/2024) and NOC were obtained before study initiation.

Participants

Participants were recruited from the OPD of Tarachand Ramnath Charitable Ayurved hospital attached to Tilak Ayurveda Mahavidyalaya, Pune. A total of 64 patients (aged 18-55 years) with BMI ranging from 24.9 to 34.9 kg/m² (Overweight & Obesity Class I) were selected based on inclusion criteria, including classical features of *Sthaulya*. Participants were randomized using a computer-generated random number table into two groups:

- Group A (Trial Group, n=32): Received a set of *Yogasana* s + *Ushnambupaan*

- Group B (Control Group, n=32): Received only *Ushnambupaan*

Intervention

Yogasana

A structured protocol from the *Ashtanga Yoga* Primary Series, including:

2 types of *Surya Namaskar* (A & B) - a foundational practice of Ashtanga vinyasa yoga practiced in southern states of India, introduced by K. Pattabhi Jois. The practice involves 3 series namely - Primary, Intermediate and Advanced series and at the starting of each series the practitioner has to practice this *Suryanamaskaras*. Where Type A consists of 11 Asanas, whereas Type B contains 19 asanas.

12 *asanas* - The asanas taken from primary series, as the series is considered for yoga therapy. Various codes and numbers such as A, B; I, II is given to certain practice is taken as it is from ashtanga yoga practice, as the code denotes the variation of the asanas.

Concluding with *Shavasana*

Each session lasted ~45 minutes daily. The practice included a 5-minute warm-up, breath-coordinated movement (*Vinyasa*), and relaxation. Standard Operating Procedures (SOPs) for each posture and breathing pattern were followed.

Surya Namaskar (Type A and B) - *Ashtanga Yoga*

Type A - constitutes of 11 Asanas namely -

Samasthiti, Urdhva Hastasana, Uttanasana, Ardha Uttanasana, Chaturanga Dandasana, Urdhva Mukha Svanasana, Adho Mukha Svanasana, Ardha Uttanasana, Uttanasana, Urdhva Hastasana, Samasthiti

Type B - constitutes of 19 Asanas namely -

Samasthiti, Urdhva Hastasana, Uttanasana, Ardha Uttanasana, Chaturanga Dandasana, Urdhva Mukha Svanasana, Adho Mukha Svanasana, Virabhardasana I (Right Side), Chaturanga Dandasana, Urdhva Mukha Svanasana, Adho Mukha Svanasana, Virabhardasana I (Left Side), Chaturanga Dandasana, Urdhva Mukha Svanasana, Adho Mukha Svanasana, Ardha Uttanasana, Uttanasana, Urdhva Hastasana, Samasthiti

12 *asanas*, namely - *Padangushthasana* - *B*, *Padahastasana* - *B*, *Trikonasana*, *Parshvottanasana*, *Utkatasana*, *Virabhadrasana I*, *Paschimottanasana*, *Purvottanasana*, *Navasana*, *Sarvangasana*, *Halasana*, *Yoganidra* *Ushnambupaan*

Patients were asked to consume half reduced boiled water throughout the day, which was stored in a thermos.

Patients were asked to take 4 liters of water initially and reduce it to 2 litres. SOP ensured a palatable temperature for individual comfort.

Eligibility Criteria

Inclusion:

- Age 18-55 years
- BMI 24.9-34.9 kg/m²
- Willing to give consent
- Presence of *Pratyatmaka Lakshana* of *Sthaulya*

Exclusion:

- Morbid obesity (BMI >34.9) [E66.01 – ICD-10-CM]
- Hypothyroidism, pregnancy, postpartum, and postmenopausal obesity
- Severe systemic disorders (renal, cardiac, hepatic), skin lesions, or secondary causes of obesity

Withdrawal Criteria

- Patient non-compliance or development of adverse symptoms
- Voluntary withdrawal

ASSESSMENT PARAMETERS

Objective:

- Weight (kg): Measured on ISI-marked digital scale
- BMI: Calculated via Quetelet's index
- Waist-to-Hip Ratio: Tape-measured at standard anatomical landmarks

- Neck Circumference: Correlated with BMI and metabolic risk

Subjective: Evaluated using the Clinical Global Impression Scale for: Likert scale 0-3

1. *Dourbalya* (weakness)
2. *Dourgandhya* (foul body odor)
3. *Swedabadha* (oversweating)
4. *Kshudhatimatra* (excessive hunger)
5. *Pipasatimatra* (excessive thirst)

Scores ranged from 0 (none) to 3 (severe); total max score: 15

Follow-Up and Data Collection

Assessments were performed on Day 0, 15, 30, 45, 60, 75, and 90. Data tools included Case Record Forms, follow-up sheets, and digital records.

Data Analysis

- Objective data: Paired t-test and Friedman test
- Subjective data: Wilcoxon signed-rank test, Mann-Whitney U test
- Significance was set at $p < 0.05$

Objective Outcomes (Pre-Post Paired t-test)

All objective parameters showed statistically significant reductions within both groups. (Table 1, Figure 1)

Table1. Objective outcomes in both groups

Parameter	Group A (Before→ After)	Group B (Before→ After)	Significance
Weight (kg)	79.66 → 74.95	78.47 → 75.13	Both $p < 0.001$
BMI (kg/m²)	28.82 → 27.15	28.01 → 26.95	Both $p < 0.001$
Waist-Hip Ratio	0.9025 → 0.8534	0.899 → 0.8625	Both $p < 0.001$
Neck Girth (cm)	16.32 → 15.39	15.31 → 14.62	Both $p < 0.001$

The results were documented via tables, bar graphs, and charts using MS Excel and SPSS software [27.0.1 in November 2020].

Results

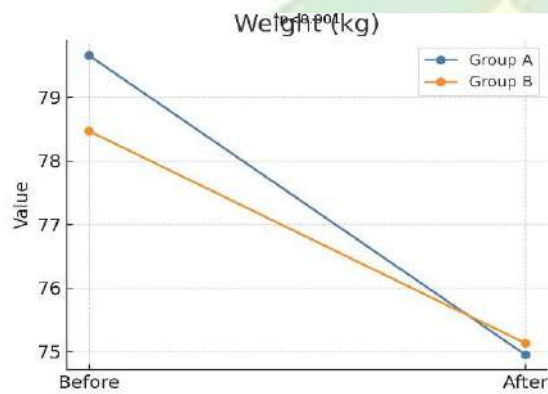
64 patients with *Sthaulya* were randomised into two groups (Group A: *Yogasana* + *Ushnambupaan*; Group B: *Ushnambupaan* only), with 32 patients in each group. All participants completed the study.

Baseline Characteristics

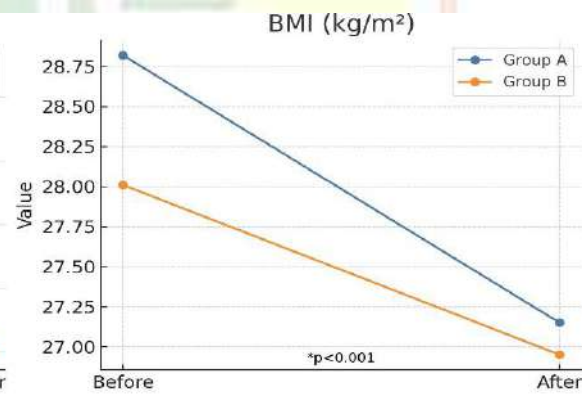
- Age: Majority (72% Group A, 75% Group B) were aged 26-30 years.
- Gender: Equal distribution in both groups (50% male, 50% female).
- Employment: 66% of Group A were unemployed vs. 44% in Group B.
- Occupation: Students formed the largest subgroup (Group A: 50%, Group B: 35%).
- Prakruti: Most common types were VP (32%) in Group A and KV (32%) in Group B.

Table2. Subjective outcomes in both groups

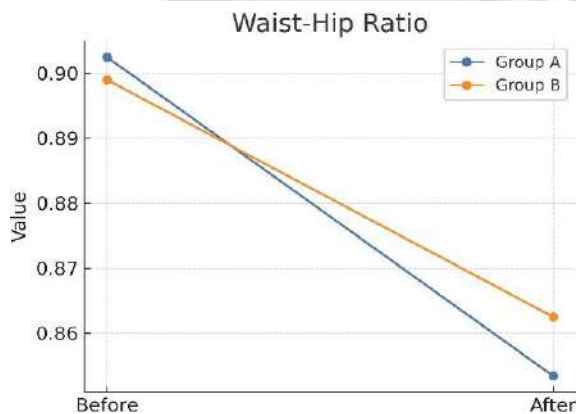
Symptom	Group A Significant Improvement	Group B Significant Improvement
<i>Dourbalya</i>	Day 0: 5.59 → Day 90: 2.34	Day 0: 6.25 → Day 90: 2.48
<i>Dourgandhya</i>	Day 0: 5.44 → Day 90: 2.55	Day 0: 5.55 → Day 90: 3.67
<i>Swedabadh</i>	Day 0: 5.91 → Day 90: 2.27	Day 0: 6.27 → Day 90: 2.06
<i>Kshudhatimatra</i>	Day 0: 5.88 → Day 90: 2.11	Day 0: 5.89 → Day 90: 2.18
<i>Pipasatimatra</i>	Day 0: 5.72 → Day 90: 2.48	Day 0: 5.72 → Day 90: 2.08



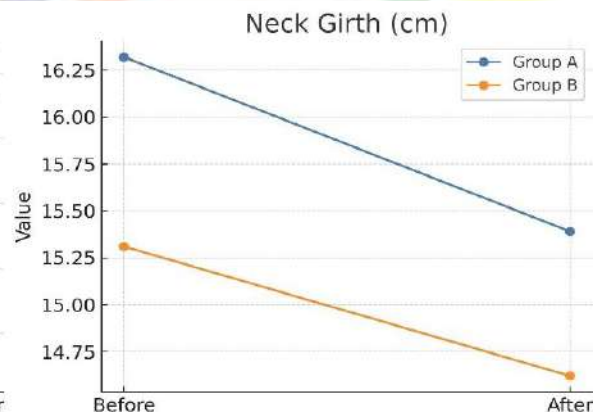
Graph 1



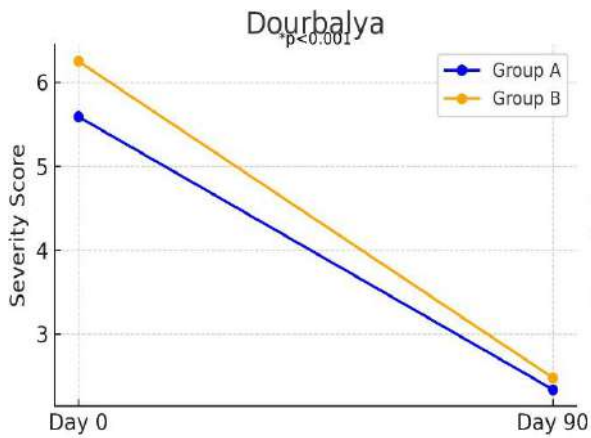
Graph 2



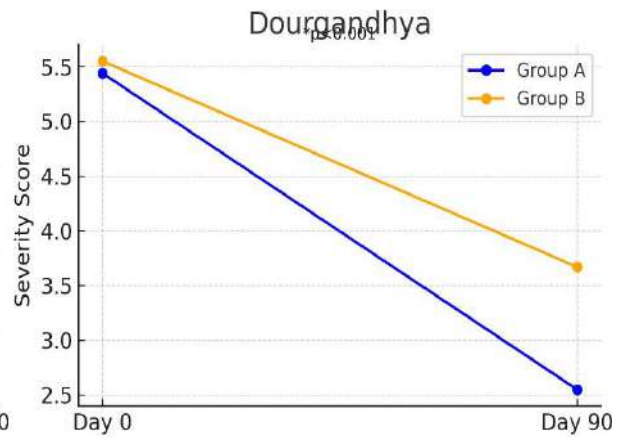
Graph 3



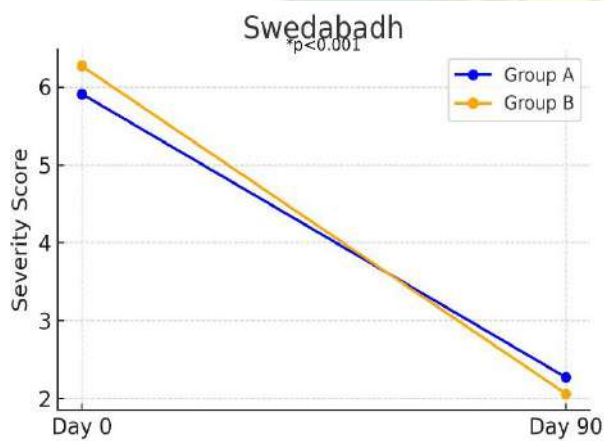
Graph 4



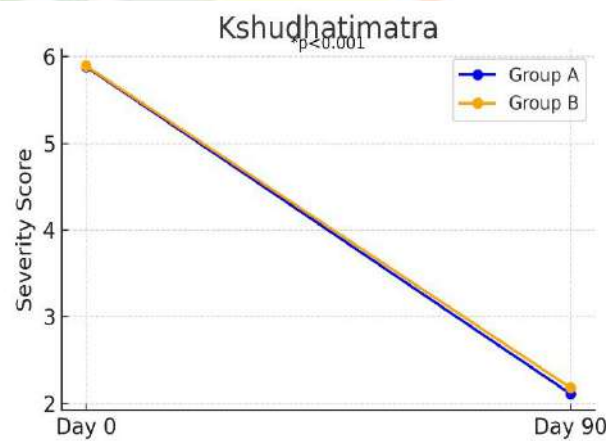
Graph 5



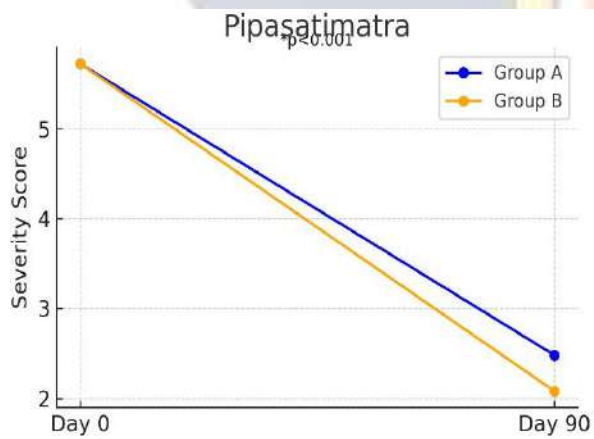
Graph 6



Graph 7



Graph 8



Graph 9

Table 3: Post-treatment comparison between groups

Parameter	p-value	Interpretation
Weight	0.948	Similar in both groups
BMI	0.726	Similar in both groups
Waist-Hip Ratio	0.188	Similar in both groups
Neck Girth	0.004	Significant effect in Group A
<i>Dourbalya</i>	0.003	Significant effect in Group A
<i>Dourgandhya</i>	<0.001	Significant effect in Group A
<i>Swedabadh</i>	0.003	Significant effect in Group A
<i>Kshudhatimatra</i>	<0.001	Significant effect in Group A
<i>Pipasatimatra</i>	0.105	Similar in both groups

DISCUSSION

This randomized controlled trial investigated the combined effects of a structured *Yogasana* regime and *Ushnambupaan* (lukewarm water consumption) on obesity (*Sthaulya*) over 90 days. The topic was chosen for its relevance to global obesity trends and the complementary mechanisms by which *Yogasana* enhances metabolic function, and *Ushnambupaan* stimulates digestion and detoxification.

A focused review of both classical Ayurvedic texts and contemporary clinical research revealed that *Yogasana* improves BMI⁶, insulin sensitivity, and fat distribution while promoting mental well-being⁶. *Ushnambupaan* has been shown to support *Agni* (digestive fire) and water- induced thermogenesis⁷, but no study examines their combined application in long-term weight

management. This trial addresses that gap by integrating these interventions into a feasible, scalable protocol

Our findings demonstrate that participants in the intervention group (*Yogasana* + *Ushnambupaan*) experienced a significantly greater mean weight loss (-5.8 kg vs. -1.2 kg; $p < 0.01$), a greater BMI reduction, and an improved waist-hip ratio compared with the control group (*Ushnambupaan* alone). Subjective symptoms such as *Dourgandhya* (body odor), *Dourbalya* (weakness), *Swedabadha* (excessive sweating), hunger, and thirst—also decreased more markedly in the combined-intervention group. High adherence (> 80% session attendance) and reported improvements in mood and stress levels underscore the psychological benefits of *Yogasana*

These results align with previous reports of *Yogasana* 's role⁸ in metabolic regulation and Pranayama's stress-mitigating effects, while extending the literature by quantifying the additive benefit of *Ushnambupaan*. Unlike short-term or small-scale studies, our trial's 90-day design provides robust evidence for sustained weight management and symptom relief.

Limitations include a modest sample size and reliance on some self-reported measures, which may introduce bias. Future research with larger, more diverse cohorts and objective measures of metabolic markers (e.g., fasting glucose, lipid profiles) will help validate and generalize these findings.

CONCLUSION

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In conclusion, the integration of *Yogasana* and *Ushnambupaan* offers a cost-effective, accessible, and holistic approach to obesity management. This combined intervention can be readily adopted in community and clinical settings, warranting further investigation into its long-term health impacts and mechanisms.

CONFLICT OF INTEREST: This study was conducted as part of the postgraduate research work for M.D. (Swasthavritta). The authors declare no conflict of interest.

SOURCE OF FUNDING: None.

ACKNOWLEDGEMENTS: The authors are grateful for the department and facility where the study was conducted.

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Cite this article:

Pawar R, Shisode N. *Yogasana* and *Ushnambupaan* in the Management of *Sthaulya* : A Randomized Controlled Clinical Trial. J Bharatiya Ayurvedigyan. 2026 Aug;2(3):20-29.