

Case Report

Effect of an Integrated Yoga Regimen on Managing Obesity: A Case Report

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ABSTRACT

Obesity is a global health concern linked to an increased risk of chronic diseases and reduced quality of life. While conventional treatments primarily emphasize diet and exercise, complementary approaches such as yoga are gaining interest for their potential in weight management. This case report evaluates the effect of an 8-week structured yoga regimen on a 38-year-old male with a BMI of 44 kg/m² and a history of unsuccessful weight management through traditional methods. The intervention included daily yoga sessions, incorporating Pawanmuktasana series-3, Nadishodhana pranayama, and quick relaxation techniques, conducted every morning from 7:30 to 8:30 AM and evening from 4:00 to 5:00 PM. The patient experienced significant changes, including weight reduction from 114 kg to 107 kg, a decrease in BMI from 44 kg/m² to 41.3 kg/m², and a reduction in waist-hip ratio from 0.92 to 0.86, indicating lower abdominal fat. Improvements in psychological well-being, including reduced stress levels and enhanced mood, were also observed. These findings suggest that yoga may serve as a valuable complement to traditional obesity management strategies, promoting both physical and mental health. Further studies are needed to investigate its long-term effects in broader populations.

Key words: Yoga, Weight Management, Body Mass Index (BMI), Holistic Health, Lifestyle Intervention

Obesity has become a major global health concern, with increasing prevalence (In 2022, 890 million adults were living with obesity, and 2.5 billion adults were overweight) linked to a range of chronic conditions including cardiovascular disease, diabetes, and certain cancers (1). These alarming diseases emphasize the urgent need for effective obesity management strategies. Traditional approaches to obesity management typically involve dietary modifications and physical exercise, aiming to create a caloric deficit and promote sustainable weight loss (2, 3). Despite these efforts, many individuals struggle to achieve and maintain weight loss, leading to the exploration of complementary therapies that could enhance traditional treatments (4).

Yoga, a mind-body practice with roots in ancient Indian philosophy, has gained attention for its potential benefits in health and wellness (5). Yoga incorporates physical postures (asanas), breath control (pranayama), and meditation, which together aim to harmonize the body and mind (6). This multifaceted approach is thought to contribute not only to

physical fitness but also to improved psychological well-being, stress reduction, and mindful eating habits (7, 8). Physically, yoga enhances flexibility, strength, and cardiovascular health (9). Psychologically, it addresses stress as a major factor in emotional eating through relaxation techniques and mindful awareness, helping individuals develop more controlled and healthier eating habits (10).

Recent studies have suggested that yoga may positively influence weight management by enhancing physical activity levels, reducing stress-related eating, and promoting a balanced approach to health (11, 12). However, the efficacy of yoga as a primary intervention for obesity remains underexplored in clinical settings.

This case report is unique in presenting yoga as the primary intervention for obesity in a patient with a BMI of 44 kg/m² who had previously struggled with conventional weight management methods. While yoga is widely recognized for promoting general health, its specific application in managing obesity remains underexplored in clinical settings. This case highlights the role of a structured yoga regimen in improving physical and psychological health, contributing to weight loss and enhanced well-being, suggesting that yoga could serve as

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a valuable adjunct in obesity management.

CASE DETAIL

A 38-year-old male, IT employee, visited our outpatient department with a chief complaint of shortness of breath, lower back pain, and knee pain, which has progressively worsened for the past two months. His history showed that gradual increase in weight gain over the past three years, during which he attempted various weight management strategies, including dietary modifications and joining a local gym. However, these efforts were unsuccessful, as he struggled to maintain consistency and adherence to the regimens. Additionally, he noted a persistent white discoloration between the toes characterized by flaky skin and itching, which had been present for approximately five years. He has been taking medication for hypertension and diabetes for 4 years.

Furthermore, his family history was paternal diabetes and hypertension, suggesting a genetic correlation with this condition. He had also attempted weight loss interventions, such as dietary changes and physical exercise, without sustained success. Moreover, his physical examination revealed a Body Mass Index (BMI) of 43.98 kg/m², classified as Grade 2 obesity. His waist-hip ratio is 1.08 indicates central obesity. Further physical signs included acanthosis nigricans, which is a skin condition characterized by dark, velvety patches in body folds and creases, double chin, and Scaly lesions in the toes as insulin resistance and obesity. His vitals are within normal. Despite these, no other systemic complications were seen.

Intervention Details

An expert yoga and naturopathy physician developed a standard yoga protocol after a thorough case history, initial counseling, and obtaining signed informed consent. A comprehensive and integrated program (Table 01) was designed for 8 weeks, two times a day, preferably 7.30 to 8.30 AM and 4 to 5 PM. The details of the intervention are outlined below: The regimen included various asanas to enhance physical fitness and mental well-being.

Table 01: Details of the Yoga program

Therapy category	Specific treatment	Duration	Frequency/day
Asanas	Pawanmuktasana series-3	20 mins	2
Pranayama	Nadishodana pranayama	10 mins	2
Relaxation	Quick relaxation technique	10 mins	2

Each day, the patient practiced Pawanmuktasana Series-3 for 20 minutes, focusing on releasing gas and tension within the body, followed by Nadishodhana Pranayama for 10 minutes, a breathing technique aimed at improving respiratory

function and promoting relaxation through breath control. Additionally, a quick relaxation technique was performed for 10 minutes to help the patient relax and manage stress levels effectively. This combination of asanas, pranayama, and relaxation techniques was executed twice daily, fostering a comprehensive approach to the patient’s obesity management.

Assessment and Monitoring

Height and weight measurements were taken at baseline, one day before the intervention, and again post-intervention early morning on an empty stomach between 7.30 to 8.30 AM, after the 8-week program. Height was measured using a stadiometer with an accuracy of ± 0.5 cm, and weight was recorded using an electronic scale accurate to the nearest ±100 g. Waist circumference was measured at the midpoint between the xiphoid process and the iliac crest, while hip circumference was evaluated at the greater trochanters, both with an accuracy of ± 0.5 cm. Body Mass Index (BMI) and waist-to-hip ratio were calculated from these measurements. Systolic blood pressure (SBP), diastolic blood pressure (DBP), and pulse rate (PR) were assessed at the same intervals using a non-invasive automated blood pressure monitor (Omron) (11, 12). The intervention was monitored by a Yoga and Naturopathy Physician, and a follow-up one week after the intervention showed no recurrence of symptoms.

Table 02: Details of the outcome before and after the intervention outcome measures

	Before intervention	After intervention
Height	161 cm	161 cm
Weight	114 kg	107 kg
BMI	44 kg/m2	41.3 kg/m2
Waist hip ratio	0.92 cm	0.86 cm
QoL	58	91
PSS	27	14

RESULTS

The patient experienced notable changes in primary outcome measures (Table 02), including a weight reduction from 114 kg to 107 kg and a decrease in BMI from 44 kg/m² to 41.3 kg/m². The waist-hip ratio also reduced from 0.92 cm to 0.86 cm, indicating a significant reduction in abdominal fat. Quality of Life (QoL) has positively improved from 58 to 91, and the perceived stress scale (PSS) has reduced from 27 to 14.

More than the physical changes, the patient reported improvements in psychological well-being. He reported decreased shortness of breath and reduction of pain in his lower back and knees contributing to an overall improvement in his quality of life. Furthermore, the patient indicated improved relaxation and mindfulness, which he attributed to the yoga practice. He noted enhanced mood and reduced stress levels, which helped him adopt healthier lifestyle choices and

improved adherence to dietary modifications. These psychological benefits paralleled the physical improvements, suggesting a holistic effect of the structured yoga program on both physical and mental health.

DISCUSSION

This present case study shows the potential positive effects of yoga therapy in managing obesity and its related complications, demonstrating significant improvements in both physical and psychological health over 8 weeks. The participant experienced notable reductions in weight, BMI, and waist circumference, aligning with findings from existing literature that support yoga as an effective intervention for weight management. These positive findings are attributed to the combined effect of physical postures (Asanas) breath control (Pranayama) and relaxation techniques (13). Asanas not only help in burning calories but also improve muscle tone and flexibility, thereby enhancing overall physical fitness. This is consistent with previous studies indicating that regular yoga practice can lead to significant weight loss and improved body composition. (14).

Pranayama practices foster mindfulness and stress reduction, addressing the psychological factors often associated with obesity (15, 16). Stress is known to contribute to emotional eating and weight gain; therefore, incorporating breathwork may provide an effective strategy for managing these triggers (17, 18). Existing literature supports the notion that breath control techniques can significantly reduce stress levels, promoting a healthier relationship with food. By lowering cortisol levels and enhancing parasympathetic nervous system activity, Pranayama can help mitigate stress-related eating behaviors, leading to healthier dietary choices (19-21). The meditation and mindfulness aspects of the regimen further supported the participant's weight management journey (22, 23).

By cultivating a greater awareness of body sensations and emotional responses, the participant was better equipped to make healthier food choices and develop a more positive body image (24, 25). This aligns with studies suggesting that mindfulness practices can reduce binge eating and improve dietary habits highlighting the need for psychological interventions in obesity management (26, 27). Mindfulness-based approaches encourage individuals to become more attuned to their hunger and satiety cues, potentially reducing the likelihood of overeating (28). The findings are based on a single individual, and larger-scale studies are needed to validate the effectiveness of Integrated Yoga Regimens for obesity management across diverse populations.

Feasibility and Adherence to the Yoga Regimen

The participant's consistent adherence to the yoga program over an 8-week period may have contributed to its success. However, the feasibility of maintaining such a regimen may

vary across different populations, including those with time constraints, physical limitations, or lack of access to a trained yoga instructor. Future studies should evaluate these factors to better understand the sustainability and practicality of yoga interventions for weight management, considering factors like home-based practices or shorter sessions.

Follow-Up Assessment

A follow-up assessment is needed to assess the long-term validity of a yoga regimen's effects on weight, BMI, and psychological well-being. This will help determine whether continued adherence is possible and whether lifestyle changes are required for long-term health outcomes. Future studies should include follow-up assessments to understand the lasting effects of yoga-based interventions on obesity management. The results are based on a single individual, and larger, more diverse populations are needed to confirm the effectiveness of integrated yoga regimens in managing obesity.

Potential Confounding Factors

There are certain confounding factors may have influenced the results. During the intervention period, the participant may change their diet or engage in other physical activities that were not accounted for, which could have contributed to the observed weight loss and improvements in BMI. Additionally, while the intervention was primarily focused on yoga, but not the medications for hypertension and diabetes may have influenced health outcomes. Future studies should control for these variables to isolate the effects of the yoga regimen itself.

CONCLUSION

The Integrated Yoga Regimen demonstrated in this case report illustrates the potential of yoga as a holistic approach to managing obesity. This tailored program effectively addressed both physical and mental health aspects, indicating that yoga can be a valuable complement to natural weight management strategies. The primary findings include notable reductions in weight (from 114 kg to 107 kg), BMI (from 44 kg/m² to 41.3 kg/m²), and waist circumference, as well as psychological improvements. These outcomes highlight the significance of incorporating yoga into obesity management, promoting overall health and well-being. However, there is an important need for further research involving a larger sample size to validate these findings and explore the broader applicability of yoga interventions in obesity management.

The case report has certain limitations, including reliance on a single participant and potential inconsistencies in generalizability to broader populations. Further research with larger, diverse sample sizes is needed to validate these findings and explore the applicability of yoga interventions in obesity management. Additionally, follow-up assessments should be included to evaluate the long-term sustainability of the observed benefits.

REFERENCES

- de Bont J, Bennett M, León-Muñoz LM, *et al.* The prevalence and incidence rate of overweight and obesity among 2.5 million children and adolescents in Spain. *Revista Española de Cardiología (English Edition)*. 2022; 75(4):300-7.
- Arumugam V, Balakrishnan A, Annamalai G, *et al.* Physiological effects of pranayama on clinical practice: A mini-review. 2024.
- Kim JY. Optimal diet strategies for weight loss and weight loss maintenance. *Journal of obesity & metabolic syndrome*. 2021; 30(1):20.
- Wankhar D, Kumar AP, Vijayakumar V, *et al.* Effect of Meditation, Mindfulness-Based Stress Reduction, and Relaxation Techniques as Mind-Body Medicine Practices to Reduce Blood Pressure in Cardiac Patients: A Systematic Review and Meta-Analysis. *Cureus*. 2024; 16(4).
- Annamalai G, Poornachandran K, Arumugam N, *et al.* Effects of Laghoo Shankaprakshalana (yogic colon cleansing) on anthropometric measurements in obese individuals. *Journal of Complementary and Integrative Medicine*. 2024(0).
- Balakrishnan A, Muthupandi P, Arumugam V, *et al.* Breathe In, Breathe Out: Yoga's Healing Touch on Sinusitis-induced Psychological Comorbidities. *Journal of Primary Care Specialties*. 2024; 5(1):78-80.
- Rooney C, McKinley MC, Woodside JV. The potential role of fruit and vegetables in aspects of psychological well-being: a review of the literature and future directions. *Proceedings of the Nutrition Society*. 2013; 72(4):420-32.
- Bhandari RB, Balkrishna A, Maheshkumar K, *et al.* Traditional formulations for managing COVID-19: A systematic review. *Journal of Integrative and Complementary Medicine*. 2024; 30(5):420-30.
- Wong SSS, Liu TW, Ng SSM. Health status of aged women with or without the experience of practicing yoga. *BMC Women's Health*. 2023; 23(1):524.
- Cecchetto C, Aiello M, Gentili C, *et al.* Increased emotional eating during COVID-19 associated with lockdown, psychological and social distress. *Appetite*. 2021; 160:105122.
- Boopalan D, Vijayakumar V, Ravi P, *et al.* Effect of Yoga and Naturopathy Treatments on Psychological Burden in Obesity: A Single Case Report. *CAND Journal*. 2023; 30(2).
- Geethanjali S, Venugopal V, Poonguzhali S, *et al.* Effect of clary sage oil as an aromatherapy on cardiac autonomic function among patients with premenstrual syndrome—A randomized controlled study. *Obesity Medicine*. 2020; 18:100193.
- Palanimurugan P, Arumugam V, Balakrishnan A, *et al.* Yoga and Naturopathy intervention on psychological comorbidities and autonomic function for irritable bowel syndrome patient: A case study. *Brain Behavior and Immunity Integrative*. 2024; 5:100042.
- Arumugam V, Kuppusamy M, Tarakeshwari G, *et al.* Letter to Editor: Validated yoga protocol for college student mental health. *Brain Behavior and Immunity Integrative*. 2024; 5:100039.
- Sathya A, Arumugam V, Balakrishnan A, *et al.* A study protocol for a randomized controlled trial on the effect of Surya Nadi Pranayama practice on cognitive abilities in school children. *Open Health*. 2024; 5(1).
- Devi G, Swathi KV, Archana K, *et al.* Effect of Suryanamaskara and Heating Pranayama on Grade 1 Obesity-A Randomized Controlled Trial. *Journal of Ayurveda and Integrated Medical Sciences*. 2024; 9(1):23-31.
- Yadav SS, Saoji AA, Somanadhapai S, *et al.* Effect of Yoga-based breathing practices on depression, anxiety, stress, and fear of COVID-19 positive hospitalized patients: A randomized controlled trial. *Journal of Ayurveda and Integrative Medicine*. 2024; 15(2):100897.
- Arumugam V, Balakrishnan A, Annamalai G, *et al.* Immediate effect of Kaki Mudra on pupillary light reflex among healthy individuals—A study protocol of a Randomized control trial. *Open Health*. 2024; 5(1):20230032.
- Toussaint L, Nguyen QA, Roettger C, *et al.* Effectiveness of progressive muscle relaxation, deep breathing, and guided imagery in promoting psychological and physiological states of relaxation. *Evidence-Based Complementary and Alternative Medicine*. 2021; 2021(1):5924040.
- Eda N, Ito H, Akama T. Beneficial effects of yoga stretching on salivary stress hormones and parasympathetic nerve activity. *Journal of sports science & medicine*. 2020; 19(4):695.
- Nagarathna R, Anand A, Rain M, *et al.* Yoga practice is beneficial for maintaining healthy lifestyle and endurance under restrictions and stress imposed by lockdown during COVID-19 pandemic. *Frontiers in Psychiatry*. 2021; 12:613762.
- Benjamin JJ, Maheshkumar K, Radha V, *et al.* Stress and polycystic ovarian syndrome-a case control study among Indian women. *Clinical Epidemiology and Global Health*. 2023; 22:101326.
- Maheshkumar K, Dilara K, Ravishankar P, *et al.* Effect of six months pranayama training on stress-induced salivary cortisol response among adolescents-Randomized controlled study. *Explore*. 2022; 18(4):463-6.
- Nandakumar H, Kuppusamy M, Sekhar L, *et al.* Prevalence of premenstrual syndrome among students—Stress a potential risk factor. *Clinical Epidemiology and Global Health*. 2023; 23:101368.
- Roy B, Maheshkumar K, Krishna AKI. Assessment of psychological stress among female police personnel in Kerala. *IOSR Journal of Dental and Medical Sciences (IOSR-JDM Volume 15, Issue 10 Ver VI)*. 2016:64-6.
- Thanalakshmi J, Maheshkumar K, Shree K, *et al.* OM Chanting Reduces Psychological Distress Level in Office Workers During Covid 19 Pandemic. *Physical rehabilitation and recreational health technologies*. 2024; 9(1):20-4.
- Venugopal V, Geethanjali S, Poonguzhali S, *et al.* Effect of yoga on oxidative stress in type 2 diabetes mellitus: a systematic review and meta-analysis. *Current Diabetes Reviews*. 2022; 18(2):63-70.
- Shireen H, Milad J, Dor-Ziderman Y, *et al.* A Body Scan Meditation Reduces Negative Affect and Food Cravings in Emotional Eaters: A Randomized Controlled Study of the Effects, Mediators, and Moderators. *Mindfulness*. 2024; 15(1):189-202.

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