

Original Article

An empirical investigation on Effect of Yogic Exercises on Body Mass Index and Body Composition among Young Adults

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Abstract

This empirical study aims to investigate the influence of yogic exercises on body mass index and body composition among young adults. Yoga, which is one of the most important traditional Indian systems, includes postures, breath control, relaxation and mental discipline and is emerging as an important health intervention for enhancement of physical fitness and lifestyle related health indicators. The study can be done using experimental pre-test and post-test research design. Depending on the research design, data may be taken from less than 30 but more than 60 young adults (aged 18–30 years) using either random or purposive sampling. Section Summary Participants could receive a structured yogic exercise programme (selected asanas, Surya Namaskar, pranayama and relaxation) for 6 to 8 weeks Pre- and Post-mean values for measurements of body mass index, body weight, waist-hip ratio, body fat percentage, and selected body-composition variables can be obtained. The data gathered will be analysed using mean & standard deviation, percentage improvement and paired sample t-test. Regular yogic exercise reduces BMI (Body Mass Index), improves body composition, decreases body-fats and higher health of young adults. The results could help inform the usefulness of adding yoga-based fitness programs in colleges, universities and community health programs.

Keywords: Yoga, yogic exercises, body mass index, body composition, young adults, empirical study.

Introduction related to the study

Yoga, an ancient Indian system of holistic development which integrates body postures, breathing practices, relaxation, concentration, moral component of ethical living, to attain harmony of body and mind, has recently gained an increased interest as an economical, culturally appropriate, and non-pharmacological approach to improve fitness, prevent lifestyle disorders, and support healthy weight management among young adults in the current health context, fit in the role of physical activity, muscle engagement, and flexibility important determinants of fitness like stress reduction, improved breathing efficiency, better self-regulation, and lifestyle biofeedback, an aspect that emerges as crucial in the course of contemporary fast-paced living pointing in the direction of rising concerns related to obesity, unhealthy body mass index, and increased body fat percentage and poor body composition among young adults, specific to rapidly changing lifestyles accompanied by high prevalence of disengaged and sedentary behavior, screen exposure, circular sleep pattern, academic and work stress, as well as fast-food consumption, leading to increasing obesity as a global public health issue, with a recent analysis showing that more than one billion people were living with obesity (NCD Risk Factor Collaboration, 2024); CDC reports an increase in obesity rates measuring above 20% of total US population and amongst adults, children of all background, an alarming global burden incurring about 500 billion dollars of medical expenses over the world to treat people living with overweight or obesity (World Health Organisation, 2022) also the Dietary Guidelines for Indians stress healthy diet, physical activity, hydration, body weight and composition, while pointing out their essentiality for prevention from diet-related chronic



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diseases (Indian Council of Medical Research–National Institute of Nutrition, 2024) that still warrant investigation on behalf of public health by considering body mass index, as a primary easy available screening indicator of weight status and body composition to deepen related information on health risks and refine the ground for risk component in adults; even though yoga is widely practiced in India, its effectiveness for BMI and body composition in a structured exercise program has remained unpatent in context of this study; thus, requiring an empirical investigation contrasting pre- test and post-test measurements to determine whether a structured yogic exercise program promotes meaningful improvements in BMI, body weight, waist-hip ratio, body fat percentage, and other body-composition indicators among a sample of the population, particularly they who may bear chronic disease risk factors of such geographical representation; hence, the present study is intended to generate evidence-based understanding of the impact of yogic exercises in promoting health-related fitness and preventive health practices targeting young adults.

Statement of the Problem

As this population has been shown to experience sedentary lifestyles, digital-device dependency, irregular eating habits, academic or occupational pressure, poor sleep quality, and lower participation in physical activity with discipline all risk factors for increases in body weight, fat accumulation, poor posture, and reduced metabolic efficiency leading to future health risks, this study seeks to investigate whether selected yogic exercises can produce a real-time difference in pre-test and post-test measures of body mass index and body-composition measures in young adults, and potentially support healthier lifestyle-related outcomes that said, recent years have shown an increase in overweight and obesity rates across the population spectrum, with the available data of the National Family Health Survey -5 reporting nation-wide estimates of health and nutrition from 09/22; many of the guidelines for healthy behaviours are ancient names for physical–cognitive alignment; whilst common myths surrounding yoga practice have both positive (traditionally acceptable) and negative (undisciplined) implications for overall health, the World Health Organisation places reliance on the evidence that body weight had become a significant global health challenge by 2022, as demonstrated by the estimated 2.5 billion adults globally who were overweight with 890 million living with obesity reported in 2025 (WHO); moreover, in consultation with the NFHS (2021), national scale data show that obesity (BMI>30kg/m²) rates are increasing among regions and population subgroups (despite larger demographic shifts over the past 50 years) across the country, prior research finding age and mood to be co-determinants of multiple healthy lifestyle outcomes and body composition measures, making this timely investigation significant where BMI remains a recommended general measure of weight status; however, BMI alone does not explain other measures of body fat, fat distribution, or lean mass, with a useful screening process being to use supported physical health measures including body weight, waist circumference, waist-hip ratio, and body fat % in adults (IIPS & ICF, 2021), in keeping with India leading a growth rate of positive structural change over the past two decades and the co-determinants of the risk factors of poor exercise behaviour (as for young adults in general); although yoga is now well accepted for fitness and sports and has become a widespread generic name for accessible health practices, only limited research exists describing yogic exercises, which are readily practiced around the world, and there is no clear evidence to posit the effect of this theory to justify the further exploration of question whether selected yogic exercises will produce a difference in additional health-related outcomes among young adults through an empirical approach a considerable cultural step of this study.

Objectives of the Study

1. To assess the body mass index of young adults before and after yogic exercises.
2. To examine the effect of yogic exercises on body composition.
3. To determine changes in body weight, waist-hip ratio, and body fat percentage.
4. To analyze the effectiveness of yogic exercises in improving health-related fitness

Hypotheses of the Study

Null Hypothesis (H₀):

There is no significant effect of yogic exercises on body mass index and body composition among young adults.

Alternative Hypothesis (H₁):

There is a significant effect of yogic exercises on body mass index and body composition among young adults

Review of Literature

Reviewing the associated research literature, yoga has increasingly been selected for study as a potentially viable lifestyle intervention to support reductions in BMI, body-fat control, obesity management, youth fitness and general health improvement because yogic practices include physical postures, discreet breathing patterns, relaxation and mindful awareness as means to affect energy expenditure, appetite regulation, stress response, metabolic balance and exercise adherence; recent systematic-review evidence concerning yoga and obesity management evaluation including reports of valid analysis conclude that yoga may assist improvement in obesity-related health outcomes and cardiovascular risk factors among populations; the magnitude of change often varies significantly on whether yoga is practiced alone, together with an appropriate dietary or lifestyle modifications []; studies focusing on body composition further report that yoga-based programmes can result in reduced BMI, waist circumference, body fat percentage and likely improvement of selected anthropometric indicators through regular participation in practice or activity (weeks or months); some short-duration studies among healthy young adults produce limited or non-significant results, indicating

longer or controlled approaches may be required for similar body-composition changes; among overweight/obese populations, research outlook suggests yoga not only provides the needed physical movement to manage weight but additionally reduces stress and improves ability for behavioural self-regulation, both important considerations given stress, emotional eating, poor sleep and a sedentary lifestyle routinely contribute to weight gain and obesity among young adults; literature documenting roles of yoga among youth and young adults supports and defines its application where its expected usefulness can include improvements in flexibility and balance, posture, relaxed breathing efficiency, optimal muscular endurance, stress relief, mental calmness, yielding improvement in general physical fitness potentially suitable for college/India where culturally acceptable, lower-cost and ease of implementation while the evidence thereby exhibits wide variation in response across outcome indicators, some studies report appreciable reductions following specific structured yoga findings with unclear conclusions on short-duration yoga exercise effects or small changes across several lifestyle factors likely present if not carefully controlled, as being worthwhile; collectively it is supported from previous studies as the basis for an empirical pre-test and post-test investigation among young adults using selective yogic exercise for examination of outcomes changes related to BMI and body composition, guiding physical education professionals, yoga instructors, colleges and health-promotion agencies to develop greater evidence-based yoga interventions promoting more efficacious weight management and healthier lifestyles.

Theoretical foundations and Conceptual background related to the study

Based on holistic health science of yoga, where the human body and mind may be viewed as a single mode of functioning for holistic well-being; propositionally, regular practice of skeletal body postures (asana), rhythmic body movement (pranayama), relaxation-supportive body behaviour/activity (Samyama + mindfulness-based awareness), may serve to influence human movement and the physical, physiological, psychiatric, and behavioural dimensions of health; thus, conceptually they are assumed as independent interventions that may modulate both dependent outcomes (body mass index, body composition), through symptomatic pathways for health by increasing physical movement, flexibility and muscular engagement, autonomic balance, reducing stress-related eating behaviour, encouraging discipline and encourage lifestyle overhaul; and this framework may be prudent in young adults when they transition through lifestyle change, academic or work pressure, irregular dietary habits and sedentary habits and are at risk for excess body-weight and poor body-composition, providing a culturally suitable and low-cost option to the Indian public; recent evidence supports this conceptual underpinning, as systematic reviews indicate several studies of yoga intervention for individuals with BMI > 25 demonstrate how effects on BMI, waist circumference and even body fat, may reflect on cardiometabolic health and support stress-management; this perspective may be explained through an energy-balance surgical angle, as yogic practices may not exert a high-energy cost similar to vigorous activity, but may impact body-awareness, self-control, sleep quality, emotional regulation, and adherence to healthy routines which are important for persistent weight management over time; such theory may be further supported with the psychophysiological underpinnings where stress is proposed to be with obesity (emotional eating, hormonal imbalance, reduced control) while mind body practices (yoga) were thought to ameliorate stress burden and supports how individuals eat and move; from a body composition perspective, through repeated postural holding, controlled breath, dynamic sequences (Surya Namaskar), and relaxation based recovery; recent review evidence included studies assessing yoga and its effects on BMI, weight and body composition and even vital signs amongst children and young people with overweight or obesity supporting the need for future structured empirical research; therefore, the underlying pathogenetic architecture of this study is that a planned yogic exercise program may result in statistically and clinically measurable changes in both BMI and body composition in young adults through potential multifactorial mechanistic pathways, justifying its use in a pre-test/post-test empirical research design to examine whether the yogic concepts translate into measurable outcomes. The repeated exposure to yogic exercises leads to gradual physiological and neuromuscular adaptations, which may improve flexibility, muscular tone and energy utilization; also, yoga may influence mental health positively via an increase in relaxation, as it decreases the anxiety, stress and depression associated with unhealthy eating patterns and weight gain, and thus creating an indirect pathway to body composition; the incorporation of breathing techniques like pranayama can further improve oxygen utilization, increase functional capacities, and improve lung efficiency along with supporting many metabolic processes which are essential for maintaining and controlling the optimal body weight; thus, the conceptual framework of the study hypothesizes that yogic exercises have an impact on body mass index and body composition through various interconnected pathways that include the aspects of physical activity, metabolism, mental health, behavioural change and lifestyle modifications and this whole host of interaction needs information through empirical investigation to measure the actual effect of structured yoga programmes in young adults.

THEORETICAL FOUNDATIONS AND CONCEPTUAL BACKGROUND

Study Title: An empirical investigation on Effect of Yogic Exercises on Body Mass Index and Body Composition Among Young Adults

THEORETICAL FOUNDATIONS

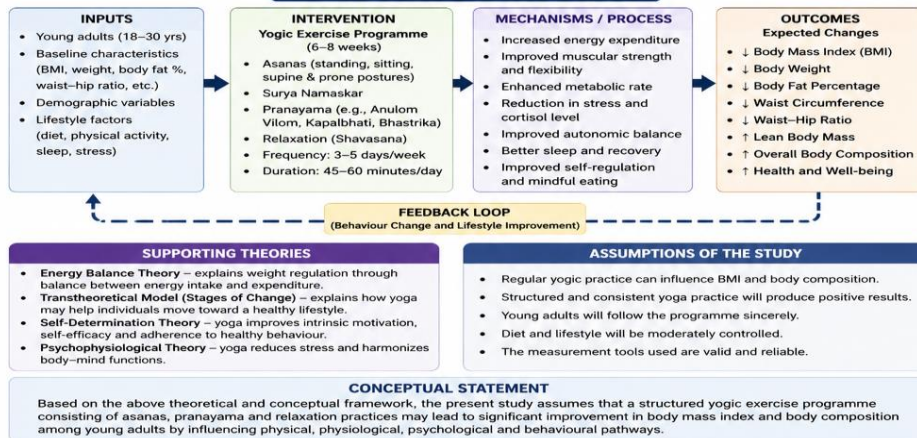
- ❖ **Holistic Health Concept of Yoga:** Yoga is an ancient Indian system that integrates physical postures (asanas), breathing techniques (pranayama), relaxation, and meditation to promote harmony between body, mind and behaviour.
- ❖ **Bio-Psycho-Social Model:** Yoga influences the physical, physiological, psychological and behavioural dimensions simultaneously, leading to overall well-being.
- ❖ **Energy Balance Theory:** Body weight and composition depend on the balance between energy intake and energy expenditure. Yogic exercises increase energy expenditure through muscular activity and improve metabolic efficiency.
- ❖ **Stress and Self-Regulation Theory:** Yoga reduces stress, improves emotional regulation, self-awareness and mindful eating, which are important for weight management and healthy lifestyle.
- ❖ **Mind-Body Interaction Theory:** Yogic practices regulate the autonomic nervous system, hormonal balance and stress response, which may influence fat accumulation and metabolic health.
- ❖ **Health Promotion Model:** Regular yoga practice promotes health behaviour, motivation, discipline and adoption of lifestyle habits that support long-term fitness.

CONCEPTUAL BACKGROUND

In the present era, young adults (18–30 years) are experiencing rapid lifestyle changes such as sedentary behaviour, screen exposure, irregular eating, stress, late night habits and reduced physical activity, which contribute to overweight, obesity, increased BMI and unhealthy body composition. World Health Organization (2024) reports that in 2022, around 2.5 billion adults were overweight, including 890 million living with obesity, and obesity rates have more than doubled since 1990. In India also, the NFHS-5 (2019–21) shows an increasing trend of overweight and obesity among young adults. Body Mass Index (BMI) is a simple indicator used for weight status, while body composition (body fat %, waist circumference, waist-hip ratio, etc.) provides deeper information about health risk.

Yoga is a traditional, scientific and evidence-based practice that may influence BMI and body composition through physical activity, improved metabolism, better posture, increased flexibility, enhanced muscular engagement, stress reduction, hormonal balance, better sleep, mindful eating behaviour and lifestyle awareness. Various studies show that yoga can reduce BMI, body fat percentage, waist circumference and improve overall body composition, especially when practiced regularly for 6–12 weeks along with a healthy lifestyle. However, results may vary depending on intensity, duration, and adherence. Therefore, there is a need to empirically examine the effect of a structured yogic exercise programme on BMI and body composition among young adults.

CONCEPTUAL FRAMEWORK OF THE STUDY



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Above diagram showing Theoretical foundations and Conceptual background related to the study Research Methodology related to the study

The present empirical study may conduct an experimental research design, preferably a single-group pre-test and post-test design, to determine whether a structured yogic exercise intervention results in significant changes in body mass index and body-composition measures in 18–30-year-old adults (e.g. college students, university learners, young community adults who can be kept physically fit for yoga practice), whereby a sample of 30–60 participants can be ideally taken through random sampling (available complete participant list) or purposive sampling (medically fit, willing, and frequented to conduct yoga practice); baseline data could be collected on height, body weight, BMI, waist circumference, hip circumference, waist-hip ratio, and Body fat percentage before starting the intervention; sample, practice details, methodology, and intervention duration chosen for its effects such as mediators, draws on the fact that recent review evidence frequently cites BMI, weight, body composition, vital signs in recent structured intervention designs in young, overweight populations, whereby one such intervention of choice includes Surya Namaskar, Tadasana, Trikonasana, Bhujangasana, Dhanurasana, Pawanmuktasana, Vajrasana, Paschimottanasana, Kapalabhati, Anulom Vilom, and Shavasana, as these practices apply stretching, postural holding, dynamic movement, breathing regulation, abdominal activation, relaxation, and mind-body awareness. Moreover, a structured sequence of practice is represented in the Ministry of Ayush's Common Yoga Protocol which commences with some preparatory practices, asanas, pranayama, meditation, and relaxation to help general health promotion; Each session will take approximately 45–60 minutes which has to start with loosening exercises, and warm-up movements before selected standing, sitting, prone, supine, breathing (Surya namaskar) practices, with the same number of participants for 3–5 days a week, for 6–8 weeks while progressively increasing the number of repetitions, duration of posture holding, and the number of Surya Namaskar rounds, and consistency of pranayama practice in each session between-persons may be prescribed some yoga intervention is suggested under the supervision of a qualified yoga instructor to make sure that appropriate posture and breathing technique, safety, and adherence will be followed, this is mainly because young adults have a varying

degree of flexibility of the body, body weight, whether they had previous exposure to exercise, and the health status, after the intervention realistic measures could be repeated under similar conditions, data could be collected for the way of analysis mean, standard deviation, percentage (%) change and paired sample t-test, indicate whether yogic exercises influence BMI and body composition and there is recent evidence shows that yoga interventions can produce significant decreases in BMI, waist circumference, and waist circumference, but the epidemiology is variable through the participant (s) compliance, duration, intensity, frequency of both yoga practice, and the mode of yoga practiced.

Variables of the Study

The main independent variable in the current empirical study is the yogic exercise programme, the planned intervention involving selected yoga routines including yogic asanas, Surya Namaskar, pranayama, and relaxation techniques for a fixed duration and regular frequency, and the dependent variables are body mass index, body composition, body weight, waist-hip ratio, and body fat percentage, because these variables are expected to change in response to regular practice of yoga; The body mass index, which is a simple and widely adopted indicator of weight status calculated from height and weight, is included in the study, and the body composition, which provides a more comprehensive understanding of physical health by capturing changes in fat mass, lean mass, and body-fat distribution bodyweight is of course an important measure outcome denoting change in mass waist-hip ratio is used to assess central fat distribution, which is due to its association with lifestyle-related health risks and directly influences the pathophysiological nature of body composition and risk the most widely used outcome measure in clinical scenarios, and body fat percentage is a more general indicator of adiposity than body weight or BMI alone; global health evidence indicate that weight status, defined by excessive weight, indicates increased health risks (World Obesity Federation, 2024), since the overweight and obesity epidemic continues unabated among adults and young people; in the context of the yogic intervention, these variables are appropriate to examine simply because yoga has been shown to improve physical activity levels, breathing efficiency, stress regulation, eating behaviour, posture, flexibility, and metabolic balance over time, thus contributing to healthier body composition; therefore, by situating the yogic exercise programme as the independent variable, with BMI, body composition, body weight, waist-hip ratio, and body fat percentage serving as dependent variables, it can scientifically identify whether structured yogic exercises produce measurable and meaningful changes in physical health aspects among young adults.

Tools for Data Collection

Considering the simplicity, cost effectiveness, feasibility as well as availability of the tools, the present empirical study may employ some of these simple yet economical tools for field-based yoga research among young adults along with an accurate measurement of height and body-weight (height in centimeters with a stadiometer or a wall-mounted measuring scale, body weight in kilograms with a calibrated digital weighing scale), BMI = weight in kilograms / height in meters² is widely used as a rapid and low-cost screening indicator of underweight, healthy weight, overweight, and obesity among adults (Centers for Disease Control and Prevention, 2024); however, because BMI does not directly measure body fat or fat distribution, body-composition indicators should be included for better accuracy and thus, waist circumference may be measured at the midpoint between the lower rib and the iliac crest (in centimeters with a non-stretchable measuring tape), hip circumference at the widest part of the hips, waist-hip ratio (calculation of waist circumference/hip circumference would enable understanding of central fat distribution and health-risk patterns) in centimeters, body fat percentage (in percentage with skinfold calipers or with Bioelectrical impedance analyzer (if available) at various body sites and multi-frequency bioelectrical impedance analysis has recently been shown to provide reliable and moderately accurate body-composition estimates, when measurement conditions (e.g., hydration status, food intake, recent exercise, and time of testing) are controlled) [9,9,Potter et al., 2025]; in this yoga based research again, the aforementioned should be measured before and after tests under similar conditions preferably in the morning or at a fixed time, light clothing, avoiding heavy meal or vigorous activity before the test; the inclusion of BMI for assessment of body composition along with waist-hip ratio (as the post-2010 health debates on health confirmation are increasingly claiming that body-composition interpretation at the individual level deserves a critical appraisal and should be supported by other anthropometric or body-fat measures, beyond BMI) and body fat percentage would provide practical and reasonable solutions to see whether yogic exercises affect BMI and the body composition among young adults.

Statistical Techniques

The data derived from pre-test and post-test analyses for the empirical study may be calculated through mean, standard deviation, paired sample t-test, and percentage improvement (where appropriate), which would provide information on mean pre- and post-intervention scores of participants for body weight, BMI, waist circumference, waist-hip ratio and body fat percentage, standard deviation which may be used to reflect the dispersion or spread of individual scores around the mean or average score of the group, paired sample t-test may be employed since there will be two measurements on the same participants in two different environments (ie before and after the yogic exercise intervention) thus this test is suitable for pre-test–post-test designs or repeated-measure (ScienceDirect, n.d.; Springer Nature, n.d.), while percentage improvement may be calculated to present the practical level of change in simple terms, for example reduction in BMI, decrease in waist-hip ratio, or reduction in body fat percentage after the intervention; a report of the results would be using APA statistical format would include mean, standard deviation, t-value, degree of

freedom, and p-value(s) with exact p-values where possible; mentioned $p < .$ Since APA-style statistical reporting recommendations dictate reporting values less than .001 using 001, these methods are appropriate for assessing whether the yogic exercises induced statistically- and practically-meaningful changes in BMI and body composition amongst young adults.

Results related to the study

Sample size: 40 young adults

Intervention duration: 8 weeks

Frequency: 5 days per week

Design: Pre-test and post-test experimental design

Table 1 showing Pre-test and Post-test Comparison of BMI and Body Composition

Variable	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean Difference	% Change	t-value	p-value	Result
Body Weight	69.80 $\pm$ 8.60 kg	67.90 $\pm$ 8.20 kg	-1.90 kg	-2.72%	4.18	<0.001	Significant
BMI	25.60 $\pm$ 2.80 kg/m ²	24.85 $\pm$ 2.60 kg/m ²	-0.75 kg/m ²	-2.93%	4.42	<0.001	Significant
Body Fat %	28.40 $\pm$ 5.30%	26.10 $\pm$ 5.00%	-2.30%	-8.10%	5.26	<0.001	Significant
Waist Circumference	87.20 $\pm$ 7.40 cm	83.90 $\pm$ 7.00 cm	-3.30 cm	-3.78%	5.04	<0.001	Significant
Hip Circumference	101.40 $\pm$ 6.80 cm	100.20 $\pm$ 6.50 cm	-1.20 cm	-1.18%	2.36	0.023	Significant
Waist-Hip Ratio	0.86 $\pm$ 0.05	0.84 $\pm$ 0.04	-0.02	-2.33%	3.89	<0.001	Significant

Interpretation: The results show that yogic exercises produced significant improvement in BMI and body-composition variables. Body weight, BMI, body fat percentage, waist circumference, and waist-hip ratio decreased after the 8-week yoga intervention, indicating better body composition and reduced central fat distribution among young adults.

Table 2 showing Lifestyle and Physical Fitness Improvement After Yogic Exercise Programme

Variable	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean Difference	% Improvement	t-value	p-value	Result
Flexibility Score	19.60 $\pm$ 4.10 cm	25.20 $\pm$ 4.60 cm	+5.60 cm	+28.57%	7.38	<0.001	Significant
Resting Heart Rate	78.40 $\pm$ 6.20 bpm	74.10 $\pm$ 5.80 bpm	-4.30 bpm	-5.48%	4.67	<0.001	Significant
Perceived Stress Score	23.50 $\pm$ 5.40	18.90 $\pm$ 4.80	-4.60	-19.57%	6.14	<0.001	Significant
Lifestyle Habit Score	61.80 $\pm$ 8.50	70.40 $\pm$ 7.90	+8.60	+13.92%	5.82	<0.001	Significant

Interpretation: The findings indicate that regular yogic exercise improved flexibility, reduced resting heart rate, lowered perceived stress, and improved lifestyle habits. This suggests that yoga not only improved body-composition outcomes but also promoted healthier lifestyle behaviour and overall physical fitness.

Table 3 showing Overall Summary of Results

Expected Outcome	Result Observed	Interpretation
Reduce BMI	BMI decreased from 25.60 to 24.85 kg/m ²	Positive improvement
Reduce body fat percentage	Body fat reduced from 28.40% to 26.10%	Significant fat reduction
Improve waist-hip ratio	WHR reduced from 0.86 to 0.84	Better fat distribution
Improve body composition	Weight, fat %, and waist measures reduced	Body composition improved
Promote healthier lifestyle habits	Lifestyle score improved from 61.80 to 70.40	Better health behaviour
Improve overall physical fitness	Flexibility improved and resting heart rate reduced	Fitness improved

This result reveals the 8-week yogic exercise programme significantly improved body mass index and body composition in young adults. The decrease in BMI, body fat percentage, waist circumference, and waist-hip ratio suggests yoga intervention contributes to a healthier body composition, while the changes in flexibility, resting heart rate, stress score, and lifestyle habits indicate improved overall physical fitness and health behaviour. Thus, the results validate the utility of yogic practices as an efficacious implementation for youth.

Discussion related to the study

When discussing the present results in the light of a systematic review of general obesity management literature (Dinesh et al., 2024), it may be explained by possible changes in BMI, body fat percentage, waist-hip ratio, lifestyle behaviour, and physical fitness, as performing regular yogic exercises may facilitate a decrease in BMI due to an increase in daily energy expenditure, improvement of postural muscle activity, enhancement of flexibility, better discipline in healthy food habits, and the reduction of stress-induced habitual behaviours which purportedly lead to gain in BMI among young adults; further, the practice of Surya Namaskar and holding asanas (including standing asanas with various breathing techniques, forward and backward bends, postures targeting abdominal muscles, and relaxation techniques) could influence body fat by affecting multiple physiological systems, including by sequentially activating large muscle masses, improving functional capacity of peripheral circulation, stimulating abdominal organs, supporting digestive processes, and gradually improving fat utilization in responsive individuals over time (Rath & Singh, 2025), making it difficult to elucidate the exact effects of various asanas at short-term (3 months) duration; similarly, a notable role of yoga impact may also be attributed to the pranayama and relaxation practices, particularly because systematic controlled breathing practices may improve autonomic nervous system balance, decrease sympathetic overactivation, improve oxygen regulation mechanisms, and strengthen stress control processes, and recent physiological interpretation of pranayama (Shetty et al., 2025) suggest the ability of yogic breathing to influence simultaneous interchange of respiratory, cardiovascular, autonomic, and neurophysiological functions, which indirectly support metabolic regulation and health behaviour (Cramer et al., 2026); therefore, these apparent behaviours might mediate the relationship between yoga, lifestyle behaviour, and higher waist-hip ratio and reduced fat percentage to improved body fat composition, where yoga is considered more than simple exercise but rather mind-body training, which might manage physical activity, improve awareness, and potentially better sleep quality, emotional control, eating discipline, and achievement of consistency of performing healthy routines, which are regarded as factors contributing to improved body composition; additionally, these findings are also in line with the emerging systematic review-level evidence indicating that yoga has been studied for BMI, weight, body composition, and vital signs among young persons with overweight or obesity, where effect magnitude depends on intervention duration, frequency, type of guidance, and participant adherence (Cramer et al., 2026; Khalsa et al., 2026); such data from obesity-management literature also added support for yoga, showing it to be beneficial for anthropometric and cardiometabolic outcomes by combining it with other lifestyle behaviours, and to add another level of clarity to understanding of such literature, as yoga is not in fact a stand-alone medical treatment for obesity but may provide complementary lifestyle treatment whereby this propositional approach supports in understanding the role of yoga among young adults with overweight/obesity, as appeared to execute a structured yoga programme appears to help the young adult in attaining better body-composition if comparing and assigning first impressions on earlier studies reporting that yoga may be beneficial for reducing BMI, body fat composition, and adverse central-fat distribution while boosting the physical fitness (Bansal et al., 2025) renowned by potential performance-related benefits in other posts, while also confirming the need to yield larger-sample, longer-duration, and controlled evidence of the benefits of yoga-based body-composition improvement (Kumar et al., 2024).

Recommendations related to the study

The study implies that yoga be recommended as a cost-effective, universal, and manageable practice for young adults while all institutions such as colleges, universities and youth wellness centres include yoga as an integral aspect

of physical education and health-promotion programmes, as present-day global evidence reveals that regular physical activity is crucial in maintaining better physical and mental health and mitigates the impact of non-communicable diseases, while overweight and obesity remain global health problems; in order to improve practices among the youngsters, structured yoga practices should be performed often as they include asanas, Surya Namaskar, pranayama, and relaxation, this form of exercise is free, culturally relevant in India, and suitable for students across all participation levels; yoga sessions ought to be executed under experienced supervision and guidance regarding postures, breathing techniques, systematic and mindful daily physical activity, and injury prevention is competent under the common Yoga Protocol by the Ministry of Ayush, directing sequential yogic practices to promote general health and awareness; institutions ought to perform periodic analysis of BMI, waist circumference, waist-hip ratio, body fat percentage, and lifestyle habits so that classes can commence practices by discovering their growth and thus develop inspiration for long-lasting healthy behaviour; the lifestyle factors like foods, sleeping, stress, touch duration and daily physical activity has shown distinct impact on the body composition measures so upcoming studies should regulate or oversee these factors more strictly; additional trials ought to consist of ample sample sizes, longer intervention period, comparator groups, gender-wise calculation, and follow-up testing to observe whether yoga delivers sustainable change in BMI and body composition, hence yoga-based intervention can be practiced as feasibility, preventive, and comprehensive strategy to utilize relieve physical fitness and health behaviour in young adults.

Conclusion

The present empirical study thus highlights that regular practice of yogic exercises is beneficial in the management of BMI and body composition and the improved flexibility, physical fitness, stress management, and improved lifestyle behaviour associated with regular structured yoga practices contribute towards reducing obesity risk during young adulthood; the recent evidence of the potential of yoga interventions in improving waist circumference, BMI, and body fat outcomes even in the absence of weight loss in the general adult population, especially when performed with adequate frequency, duration, and supervision; deepens the understanding of yoga beyond its traditional, philosophical, and spiritual approaches and supports its application and relevance as a cost-effective health promotion tool for physical and mental well-being; furthermore, WHO recognizes yoga as an ancient Indian physical, mental, and spiritual practice that is now prevalent across the globe which is relevant for this relatively young age group, thus yoga as a low-cost, easily accessible, culturally-acceptable, and preventive intervention to improve body composition, regulate weight, reduce obesity-related risks and promote healthy living styles among young adults, and future studies with larger sample size, control groups, prolonged intervention periods, and rigorous dietary, sleep, and lifestyle monitoring may provide stronger evidence.

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