

Exploring the Influence of Yogic Asana Practice on Body Fat Percentage - A Systematic Review

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Abstract. Yoga is a spiritual, mental, and physical discipline-based activity practiced thousands of years ago and originated in India. Yoga is a science-rich unique holistic approach focusing on mind and body harmony. Exercise neuroscientists and physiologists long acknowledged the health benefits of physical postures, meditation and breathing exercises. However, recent research has demonstrated that breathing and meditation practices also provide active attentional benefits. Scientific evidence-based research on yoga creates interest among the research fraternity. This article highlights the current understanding of yoga asanas and their documented positive impacts on body fat percentage. The author reviewed more than 13 studies and articles about the effects of yogic asanas practice on body fat percentage. All the studies reveal the positive impact of yogic asanas (physical posture) on the different elements of body composition. The studies offer promising evidence that yogic asanas practice may hold promise to mitigate body fat percentage along with other body composition elements.

1 Introduction

Obesity is one of the vital health factors which can be altered through different treatments. It has become an epidemic in both industrialized and developing countries in today's fast-paced society and is a severe public health concern. Weight gain and obesity have emerged as global health issues that have impacted the quality of life, increased illnesses, and increased healthcare costs across the globe over the past 50 years [1]. However, the term weight loss and 'fat loss' are not similar. The term weight loss is the sum of the muscles, bones, organs, and the amount of water the body retains.

In contrast, fat loss directly concerns the body's fat percentage. Apart from insufficient diet, the most crucial contributor to obesity for a sedentary lifestyle. Thus, regular exercise is recommended by the medical fraternity to manage obesity. Lots of alternative practices are found other than a traditional exercise regime. Yoga is one of the oldest forms of physical, mental, and spiritual activity increasingly used for health goals in India and abroad. The popularity of Yoga is spreading like wildfire in this modern world. The practice of Yoga is often considered to be about physical postures ('Asanas'), breathing exercises ('Pranayama'), and meditation ('Dhyana'). It has been found that Yoga effectively promotes weight loss and improves body composition [2]. There has been a systematic review on Yoga for women's fat-loss-related outcomes. In this review, we used PRISMA to systematically examine the effects of Yoga on fat loss-related outcomes among women.

2 Significance of the study

The systematic literature review related to yogic exercise and Body fat percentage is responsible for providing adequate knowledge for the control process of obesity. The systematic literature review highlights the importance of alternative traditional training and its requirement for reducing the occurrence of metabolic disorders in the case of obesity. Yogic exercise can control serious health issues such as Type II diabetes mellitus (T2DM) and cardiovascular diseases related to the adverse effect of obesity.

3 Objective and review question, Aim of the review.

The aim of the review is associated with deriving the effectiveness of yogic exercise (Asanas) in the case of obese people.

4 Objectives

- To identify the effectiveness of yogic exercise (Asanas) on obesity management
- To evaluate the involvement of yogic exercise (Asanas) to minimize health complications related to obesity.
- To recommend creating general awareness of yogic exercise (Asanas) for obesity control

5 Review question

“How do the yogic exercise (Asanas) help control Body fat percentage, obesity, and relative health issues?”

Table.1 PICO framework for a review question [3]

Population	Intervention	Comparison	Outcome
The population is related to the people suffering from obesity	The interventions are yogic exercise	Comparative group involves people with yogic exercise (Asanas)	Outcome is connected to the controlling of obesity and lowering Body fat percentage

6 Method

The PRISMA 2020 standards were followed for conducting this review [4]

7 Literature search

Data were obtained using a systematic internet search approach using PubMed, Scopus, and Google Scholar. When developing the search strategy for this document, relevant keywords and existing knowledge of the subject were considered. Keywords included are “obesity”, “Body fat percentage”, “Asanas”, “yogic exercise,” and others. The search was limited to human studies with English language articles published between 2012 and 2022 (10 years). However, the list does not include editorials, commentaries, case studies, qualitative investigations, book chapters, or book reviews. Duplicate articles were eliminated after combining the aggregate findings from the above databases' reviewed searches in the second stage. Afterwards, the studies were screened for quality by reviewing the manuscripts' titles, abstracts, and full text. At this point, studies that didn't meet the inclusion criteria were thrown out.

TABLE 2.Keyword search.

	PubMed Central	Google Scholar	Scopus
Keywords	<ul style="list-style-type: none"> • yogic exercise • Asanas • Body Fat Percentage 	<ul style="list-style-type: none"> • Body Fat Percentage • Obesity • Body Composition 	<ul style="list-style-type: none"> • Yogic asana • Fat Percentage • Obesity and Asana

8 Inclusion/exclusion criteria and Analysis

The systematic literature review was conducted for relevant literature by using the following criteria.

TABLE 3. Inclusion and Exclusion criteria

Inclusion Criteria	Exclusion Criteria
The journals/review literature published after 2012 are included	Journals /review literature published before 2012 are excluded
Peer-reviewed journals and reliable online sources are both deemed reliable for the study.	Journals which are not peer-reviewed are not considered a part of the study.
Journals/articles in the English Language are	Journals/ articles published in other languages except English

included.	are excluded.
Literature with relevant and considered keywords is considered	Journals and literature without relevant and considered keywords are readily excluded
Articles published in journals are included	book chapters and book reviews, editorials, case studies, qualitative studies, and conference proceedings

Identification of new studies via databases and registers

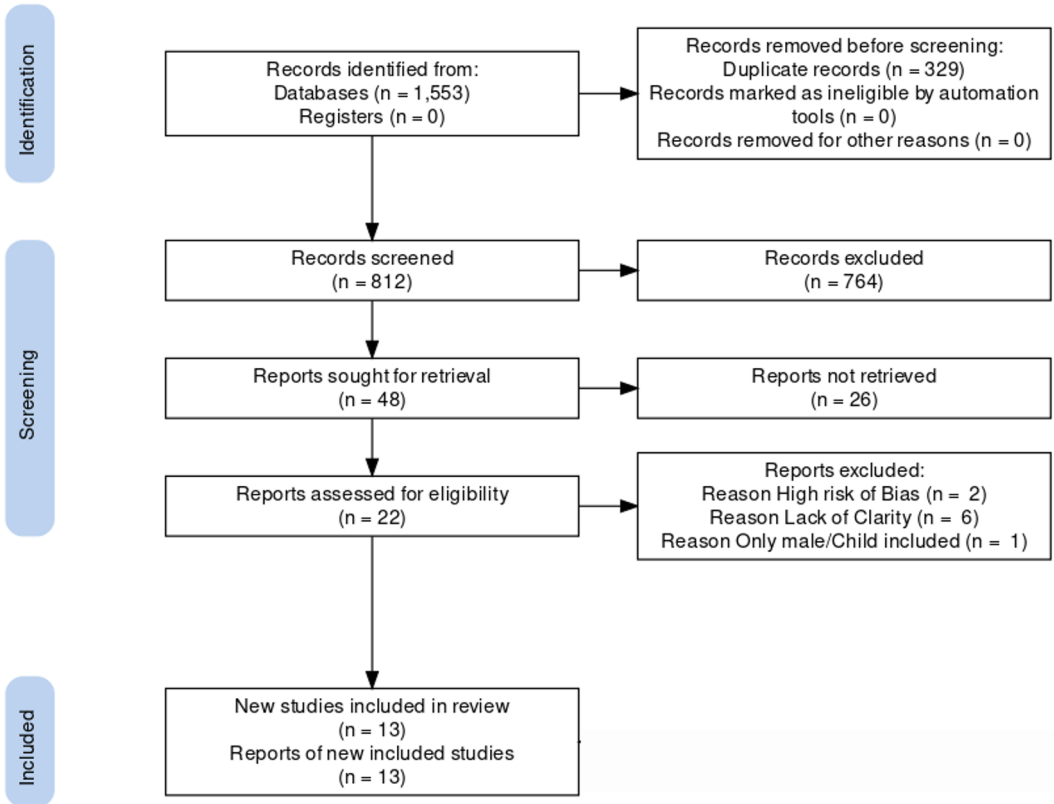


Fig.3 PRISMA flow chart 2020

9 Description of all studies and Results

In this systematic review, it has been observed that the selected studies are involved with deriving the effectiveness and responsibilities of yogic exercise on body fat percentage. After searching three databases (PubMed, Google Scholar, and Scopus), found n=812 potentially relevant articles, of which n=764 remained after assembling the three databases and removing the duplicates. Of these, 26 were removed from consideration due to their incompatibility with the inclusion criteria; among the 48 remaining articles, a full-text review yielded n=13 studies that met the inclusion/exclusion criteria.

10 Result and Discussion

For thousands of years, Yoga has been practiced. It is predicated on old theories, observations, and principles relating to the mind-body link. The health benefits of asana, yoga breathing (pranayama), and meditation have been the subject of much research. Yoga may interact with various somatic and neuroendocrine mechanisms, resulting in therapeutic effects. A comparative study conducted by Sil. P (2017) and 30 schoolgirls aged between 14-16 years with Six-week Yoga-Asanas (posture) to determine the effect on PBF. He disclosed and established that the PBF post-treatment value (23.60) was less than the pre-treatment value (25.15) [5]. However, the difference in averages across groups was not statistically significant ($p>0.05$) ($t=0.99$). According to a data review, Yoga generally does not burn as many calories as

an aerobic activity. According to a data review, Yoga usually burns less calories than aerobic exercise [6]. Static postures such as yoga asanas practiced according to the timetable used in this study did not significantly increase body fat burn during the adolescent era.

Kesehatan and Masyarakat did an experimental study, and the purpose was to investigate the effects of an 8-week low-impact aerobics and Yoga on women's body fat percentages [7]. In order to evaluate the effectiveness of an 8-week low-impact aerobics and yoga program, this study used a quantitative methodology using a pre-post approach. Female college students, ages 19 to 24. The difference in fat percentage for an 8-week low-impact aerobics and yoga program was assessed using a paired sample hypothesis test. To put it another way, the sig value (two-tailed) 0.000005 means the program effectively reduces body fat. Obese women's body fat percentage decreased from 34.1 per cent to 30.5 per cent on average [7]. However, this level of body fat was still considered obese. During the first hour or two of exercise, the amount of energy derived from carbohydrates and fat is equal, but as the carbohydrate intake decreases, the amount of triglyceride used as energy increases, which results in a decrease in blood sugar, an increase in insulin, and a reduction in glucagon [8]. The beta-oxidation process will provide the energy (ATP) needed for aerobic exercise. This paper concluded that 8-week low-impact aerobics and yoga combo program is beneficial in reducing fat percentage in obese people by 10.56 per cent on average.

An experimental study was done by Thakur J.S (2019), and the intent of the study was to know the influence of yogic exercises on body fat percentage with Pre and post-test randomized groups designed and consisting of CG (n=10) and EG (n=10) for six weeks of study. The statistical findings show co-variance (ANCOVA) with a significance level of 0.05. This study concluded with an insignificant difference in pre and post-test body fat percentage [9].

The Asana's training program was found to help reduce Body Fat %. In contrast, the Pilates training program effectively reduced weight, BMI, Body Fat %, Visceral Fat Percentage, and Body Fat %, as Pathan N and Kumar A (2013) concluded.

Pandit D. P et al. (2019) found that short-range yoga intervention does cause any effect on body composition. A non-residential 1-week yoga involved (n=51 males and n=64 females aged between 18-60 years under homemade Lacto-vegetarian diet restriction in sugar, salt, and fat intake found no statistical evidence of effectiveness on body composition, including body fat %, BMI, Body mass, and BP. However, Yoga is known to reduce anxiety and tension and aid in regulating food intake, all of which contribute to weight loss and fat mass reduction [10].

Body fat percentage is a crucial indicator of obesity that decreased dramatically in the intervention [11]. The study evaluated the effects of a 12-week yoga interference on body composition, including relative body fat percentage. The intervention consisted of a 50-minute yoga class 2 times per week for 12 weeks. After the yoga intervention, the results found a 0.7 (0.9 - 1.5) decrease in BF% ($p=0.01$). In particular, the applied yoga program was linked to a considerable reduction in WC and relative body fat.

The 12-week yoga intervention had a moderately significant positive impact on participants' waist circumference, waist-hip ratio, body weight, BMI, and body fat percentage while increasing their muscle mass, according to a randomized controlled trial conducted by Cramer C. et al. (2016). Two 90-minute hatha yoga classes are offered each week for 12 weeks in this trial. Body weight ($P = 0.003$), waist-hip ratio ($P = 0.034$), BMI ($P = 0.008$), fat percentage ($P = 0.007$), and muscle percentage ($P = 0.10$; Table 1) were all significantly different between groups. The BP measurements did not differ in systolic ($P=0.446$) or diastolic ($P=0.709$) [12].

Csala et al. reports that ten sessions of 1.5 hours of Hatha Yoga per week increase balance, flexibility, and core strength in healthy young women but do not affect body mass index, body fat percentage, resting heart rate, or heart rate variability [13].

Guo Y H. et al. (2014) demonstrate that aerobics, as represented by high-temperature Yoga, improves body fat percentage, lipid parameters, and body shape in overweight middle-aged and young women. Exercise excites the sympathetic nervous system, boosts catecholamine activity, increases lipid oxidation enzymes' amount and activity, reduces fat levels, increases consumption, and reduces body fat [14]

In the review article, S. Behla S and Misraa A (2017) concluded that obesity is becoming more common in India.[15] The country needs to take the proper steps to prevent and manage it.[16] Obesity characteristics, such as ectopic fat, are more terrible for Asian Indians and cause more problems at lower BMI levels than for white Caucasians. Researchers suggested that Advanced obesity treatment centers can use bioelectrical impedance analysis (BIA) and dual-energy X-ray absorptiometry (DXA) to measure body fat percentage [17].

Lauche R et al. (2016) concluded in their systematic review and meta-analysis that preliminarily, Yoga appears to be a safe and effective intervention for lowering body mass index and BF per cent in overweight or obese people [18]

The effect of a one-month fasting program with yoga training on the body configuration of learner female athletes has been scrutinized by Zorofi et al., A total of 20 women were randomly allocated to EG and CG groups, both of which

attended yoga classes for four weeks, for two 60-min sessions per week, and found yoga exercises can provide athletes with a reasonable option to maintain their ideal weight, body fat percentage, and WHR [19]

Using yoga-asana training as an exercise for reducing obesity in adolescent boys [20] demonstrated improvements in BMI, FM, BF%, FFM, BMR, and TC from baseline when compared with non-yoga exercise.[21]

11 Conclusion

This systematic review has provided the conditions for reviewing the precise and appropriate application of the yogic asana practice and its effect on the body fat percentage of obesity. Complications that are related to the condition of obesity have been reduced through the application of the yogic asana practice. The yogic asana practice has reduced the body fat percentage in moderate and long duration of practice. Yogic asana practice planning for a longer duration has been encouraging for the treatment procedure of obese patients. In the case of obesity, yogic asana practice has been recommended in association with the condition for reducing the risk of health-related complications. The application of yogic asana practice and resistance exercise is involved with reducing fats and calories by lowering BMI levels.

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