



THE INTERNATIONAL ASSOCIATION OF YOGA THERAPISTS

Research Summary for Yoga Therapists: Yoga Therapy for Metabolic Syndrome and Weight Control

By Pam Jeter and Timothy McCall

Research Summaries for Yoga Therapists are a service provided by IAYT to help yoga therapists navigate the twists and turns of the research landscape. The full reference can be found here:

Yang, K. & Rioux, J. (2016). Yoga therapy for metabolic syndrome and weight control. In: S. B. S. Khalsa, L. Cohen, T. McCall, & S. Telles (Eds.), *The principles and practice of yoga in health care*, 241–273. Pencaitland, United Kingdom: Handspring Publishing.

Definition of the disorder

This summary includes two conditions: metabolic syndrome and obesity. Metabolic syndrome is a combination of risk factors for type 2 diabetes mellitus (T2DM) and cardiovascular disease (CVD), including increased blood pressure (BP), cholesterol, fasting glucose, and waist circumference. Obesity is defined as having a body mass index (BMI) > 30.

Common treatment options for obesity and metabolic syndrome are surgery and medications that can have negative side effects.

Prevalence (How common is the condition?)

In 2008, worldwide, 200 million men, 300 million women, and 40 million children (under age 5) qualified as obese. There were 3.4 million deaths linked to obesity and metabolic syndrome.

Rationale for yoga

Physical activity has been shown to lower the risk for obesity and metabolic syndrome. Yoga includes physical postures as well as breathing and relaxation techniques that are potentially feasible for this population. Furthermore, yoga is generally safe and has no known drug interactions.

1. Weight loss

The authors conducted a systematic search in databases for studies relating to *yoga* and *obesity* or *weight loss* from 1995 to 2015. Twenty-three randomized and nonrandomized controlled and uncontrolled pre–post studies using objective

weight measures were included. Systematic reviews were excluded.

Who was studied?

Children and adults considered overweight or obese or with risk factors associated with these conditions, such as hypertension, were included. Four studies were conducted with healthy adults. Age range was from 8 to 75.

How were the studies conducted?

- The review identified ten randomized controlled trials (RCTs), three nonrandomized controlled trials, and ten uncontrolled pre-post studies. The sample sizes ranged from 6 to 205 participants.
- Control groups included healthy controls and people engaging in regular exercise (e.g., circuit training, treadmill, walking, aerobics), no exercise and normal diet, waitlist, conventional care, and health education.
- Duration of studies ranged from 6 days to 1 year, in sessions ranging from 45 minutes to 4 hours. The frequency of yoga intervention ranged from 2 to 7 days/week.



- Styles of yoga studied were Viniyoga, Vinyasa, Bikram, and Ashtanga.
- Outcomes measured involved weight, BMI, body fat percentage, waist circumference, and other biological measures such as BP and cholesterol.

What did the researchers find?

- 22 out of 23 studies found a quantitative reduction in weight, BMI, and/or body-fat percentage.
- 12 of 23 studies found clinically relevant weight loss or chronic disease risk reduction.
- In the ten uncontrolled pre–post studies, nine found significant reductions in weight, BMI, and/or body-fat percentage.
- The three nonrandomized controlled trials all found significant reduction in weight, BMI, and/or body-fat percentage.
- All ten RCTs found significant reduction in weight, BMI, and/or body-fat percentage.

Were adverse events reported?

Adverse events were not reported.

What were the limitations of the studies?

The studies differed substantially in design, population, yoga intervention, frequency, and duration, making it difficult to compare studies and limiting the generalizability of findings.

2. Metabolic syndrome

The authors conducted a systematic search in databases for studies from 1995 to 2015 relating to *yoga* and *metabolic syndrome* or other risk factors such as *prediabetes* or *glucose intolerance*. Seven studies (four with well-defined metabolic syndrome diagnoses) were included in the review; six were RCTs and one was uncontrolled (pre–post design). Systematic reviews were excluded.

Who was studied?

Participants (21–75 years old) were diagnosed with well-defined metabolic syndrome ($n = 4$) or had risk factors associated with metabolic syndrome, including diabetes and being overweight ($n = 3$).

How were the studies conducted?

- The sample sizes for all studies ranged from 23 to 180.
- Six RCTs and one uncontrolled pre-post study were reported on.
- Types of control groups used were waitlist, stretching, and health education.
- Duration of the studies ranged from 8 to 24 weeks.
- Frequency of yoga ranged from twice weekly to daily.

- Yoga styles used in the studies were Restorative, Bikram, Hatha, and Vinyasa.
- Outcomes were determined by measuring metabolic risk factors, such as BP and salivary cortisol, glucose tolerance, and cholesterol.

What did the researchers find?

- Three of six RCTs found significant reductions in either fasting glucose or BP between groups.
- The uncontrolled study found significantly improved changes in glucose tolerance but not in fasting glucose.

Were adverse events reported?

Adverse events were not reported in the chapter.

What were the limitations of the studies?

The studies differed substantially in design, population, yoga intervention, frequency, and duration, making it difficult to compare studies and limiting the generalizability of findings.

Take-away message

Yoga appears to be an appropriate and potentially successful intervention for weight maintenance, prevention of obesity, and risk reduction for disease in which obesity plays a significant causal role. This review demonstrated that yoga can improve cardiometabolic factors among those with metabolic syndrome and prediabetes. The findings are broadly applicable to a large proportion of the global population with these conditions and may contribute to healthier lifestyles and longer, more productive lives. Sustainability of long-term effects was considered a key component of these studies.

Clinical relevance

The scientific studies to date suggest that yoga can be an effective intervention in both the prevention of excessive weight gain and treatment of overweight people and those with obesity and/or metabolic syndrome. Although the yogic approaches used in these studies varied, which scientists consider a limitation to the generalizability of the findings, the high prevalence of positive results also suggests that many yoga approaches can be effective. In significantly overweight and obese individuals, it would seem prudent to avoid practices like jumping from pose to pose, putting the full body weight on a single limb (as in some balancing poses), and doing headstands, all of which may place inordinate stress on some joints.