

# Mindful Eating and Weight Loss: A Systematic Review of Literature

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When walking, walk.  
When eating, eat.  
- Zen Proverb

## Purpose

- The purpose of this review is to explore and summarize current evidence surrounding mindful eating and its effects on weight loss and overweight or obese-related co-morbidities.

## Background

- More than one-third of adults in the United States are overweight (body mass index = 25-29.9) and more than one-third of adults are considered to be obese (body mass index > 30) and the number is expected to increase.<sup>1,2</sup>
- Obesity has become one of the most prevalent, costly, and risky disorders in the United States, increasing the risk of heart disease, liver disease, high blood pressure, type 2 diabetes, stroke, osteoarthritis, and cancer.<sup>3</sup>
- Excess weight is a risk factor for several leading causes of preventable death, which can be reduced through modifiable behaviors such as diet.
- The mosaic of physiological, psychological, and environmental factors influencing obesity makes it difficult to treat the source of the problem, as no one single source of obesity seems to exist; This also explains why most individuals regain lost weight after a successful weight loss period.<sup>4</sup>
- Recent findings suggest that through specific behavioral strategies, weight loss maintenance of at least five percent can be achieved in more than 45% of patients at four years.<sup>5</sup>
- Mindfulness is defined as “intentionally bringing one’s attention to the internal and external experiences occurring in the present moment”<sup>6</sup> and its practice has shown to increase gray matter density in regions of the brain associated with the processes of emotion regulation, learning and memory, perspective taking, and self-referential processing,<sup>7</sup> which may mediate outcomes resulting from behavioral interventions.
- Mindful eating is the concept of allowing yourself to be aware of the nourishing opportunities available through the methods of preparing and consuming foods, using all senses to choose satisfying and nutritious foods, recognizing and respecting physical hunger and satiety cues, as well as acknowledging food preferences with non-judgment.<sup>8</sup>
- Improved knowledge and understanding of prior research using mindful eating for the treatment of overweight and obesity is critical for translating research findings into personalized interventions for improved health outcomes related to weight loss.

## Methods

- PubMed and CINAHL databases were searched using the key terms “mindful eating” AND “weight.”
- Inclusion and exclusion criteria are presented in Table 1.

Table 1. Inclusion and Exclusion Criteria for this Review

- Inclusion criteria:**
- 1) Include mindful eating in an intervention or as a dependent variable.
  - 2) Focus on weight or weight-related co-morbidities as outcomes.
  - 3) Include quantitative data.
  - 4) Published in peer-reviewed journals.
  - 5) Published in English.

- Exclusion criteria:**
- 1) Articles that focused on mindful eating interventions for the treatment of anorexia nervosa, bulimia, or other disorders not in support of beneficial weight loss.
  - 2) Commentaries, reviews, or case studies.

## Results

- A total of 19 out of 46 retrieved articles were deemed eligible and are included in this review, which is presented in Table 2.
- Sample sizes ranged from 10 to 1,314 participants and the mean body mass index in most studies was >30 kg/m<sup>2</sup>, indicating that a majority of participants were obese.
- Mindful eating interventions were shown to decrease weight, body mass index, waist circumference, blood pressure, C-reactive protein, fasting glucose, and HgA1C. A *p* value of < 0.05 determined statistical significance.

Table 2. Articles Included In Review

Author, Year	N	Sample Characteristics	Selected Results
Anderson et al., 2016	94	Age: M 19.3, SD 1.3, range 18-24 Sex: 64.4% female Ethnicity: 65.4% Caucasian BMI: M 23, SD 4.0 kg/m <sup>2</sup> , range 13.3–36.0 kg/m <sup>2</sup>	Mindful eating, intuitive eating, and restraint = no correlation. Elevated restraint associated with ↑ BMI and disordered eating; elevated intuitive eating associated with ↓ BMI and disordered eating.
Arch et al., 2016	102	Age: M 20.78, SD 3.87, range 18-37 Sex: 58% male Ethnicity: 48% African-American BMI: Not reported	Brief mindful instructions led to decreased calorie consumption of unhealthy food relative to no-instruction control conditions.
Barbee et al., 2015	43	Age: M 49.3, SD 5.61, range 40-59 Sex: 100% female Ethnicity: 48.8% Caucasian BMI: M 30.99, SD 6.81	Binge eating severity was associated with emotional eating.
Chung et al., 2015	22	Age: M 50.14, SD 9, range 33-75 Sex: 100% female Ethnicity: 100% African-American BMI: 27.08-47.21	Mindfulness scores ↑ while weight ↓ over time. Higher mindfulness score group had significant weight loss over time; low score group= no weight loss.
Dalen et al., 2010	10	Age: M 44, SD 8.7, range 31-62 Sex: 70% female Ethnicity: 60% Caucasian BMI: M 36.9, SD 6.2 Weight: 101kg/m <sup>2</sup>	Participants showed statistically significant increases in measures of mindfulness and cognitive restraint around eating, hunger, and ↓ weight and C-reactive protein.
Dunn et al., 2013	1,314	Age: M 48.8, SD 9.69 Sex: 88.8% female Ethnicity: 69.3% Caucasian BMI: M 32.64, SD 6.97 Waist circumference: M 102.37 cm, SD 15.05 cm Weight: M 89.40 kg, SD 20.45 kg	Average BMI and waist circumference decreased. Percentage with BMI < 30 kg/m <sup>2</sup> and normal BP increased. Participants became more mindful of what and how much they ate (92%), daily physical activity (88%), eating fewer calories (87.3%).
Gravel et al., 2014	50	Age: M 47.5, SD 10 Sex: 100% female Ethnicity: Not reported BMI: M 27.7, SD 5.9	No group effect, time effect, or group-by-time interaction was found for BMI.
Kidd et al., 2013	12	Age: M 51.8, SD 9.1, range 31-61 Sex: 100% female Ethnicity: 58.3% African American BMI: M 44.7, SD 6.9 BP: Mean 134.9/85.1, SD 15.9/9.4	↑ Self-efficacy for eating habits, no significant change in depression, mindful eating, weight, BMI, body fat percentage, or in systolic and diastolic blood pressure.
Jacobs et al., 2013	26	Age: M 21.35, SD 4.76, range 18-42 Sex: 77% female Ethnicity: 73% Caucasian BMI: M 19.8, SD 2.32, range 15.8-24.8	A one-hour mindfulness training for weight prevention was implemented and resulted in 86% healthy food consumption.
Mantzios et al., 2014	243, 72, 98 (3)	Age: Not reported in all 3 studies Sex: Not reported in all 3 studies Ethnicity: Not reported BMI: M 25.65 (of 3 studies)	Mindfulness and self-compassion positively predicted weight loss. Self-compassion a greater support in aiding weight maintenance.
Mason et al., 2015	88	Age: M 46.69, SD 13.24 Sex: 100% female Ethnicity: 61.4% Caucasian BMI: M 35.81, SD 3.77	Naltrexone-induced cortisol increases associated with ↑ hedonic eating and ↓ mindful eating and no change in weight.
Mason et al., 2016a	194	Age: M 47, SD 12.7 Sex: 82% female Ethnicity: 59% Caucasian BMI: M 35.5, SD 3.6	Mindfulness participants reported significantly decreased levels of reward-driven eating. Reductions in reward-driven eating at 6 months mediated the effect of intervention arm on weight loss at 12 months.
Mason et al., 2016b	194	Age: M 47, SD 12.7 Sex: 78% female Ethnicity: 59% Caucasian BMI: M 35.5, SD 3.6	Mindfulness group increased in mindful eating and maintenance of fasting glucose from baseline to 12-month assessment. Increased Mindful eating associated with decreased eating of sweets and fasting glucose levels.
Miller et al., 2012	52	Age: M 54, SD 7.6 Sex: 83.5% female Ethnicity: 76.75% Caucasian BMI: M 36.14, SD 1.2 HgA1C: M 8.41, SD 0.25	Mean decrease in weight and HbA1c were significant for mindfulness intervention
Miller et al., 2014	52	Age: M 54, SD 7.6 Sex: 63.5% female Ethnicity: 76.75% Caucasian BMI: M 36.14, SD 1.2	Despite no significant difference between groups in weight loss, both groups (mindful eating vs. diabetes self-management education) lost weight.
Stites et al., 2015	26	Age: M 44.9, SD 10.6 Sex: 88.5% female Ethnicity: 69.2 African-American BMI: M 33.4, SD 9.2	Body weight decreased from the beginning to the end of the study by an average of 0.40 kg. Changes in blood lipid measures and HgA1c did not achieve statistical significance.
Thomley et al., 2011	50	Age: 40% age 46-55, 24% age 56-65 Sex: 74% female Ethnicity: Not reported Body fat percentage: M 31.24, SD 9.14 Diastolic BP: M 79, SD 11.84 Weight: M 165.68, SD 39.42	Statistically significant improvements were observed in weight, diastolic blood pressure, and body fat percentage.
Timmerman et al., 2012	35	Age: M 49.6, SD 6.8, range 40-59 Sex: 100% female Ethnicity: 54% Caucasian BMI: M 31.8%, SD 6.8	Participants in the intervention group lost significantly more weight, had decreased average daily caloric and fat intake, had increased diet-related self-efficacy, and had fewer barriers to weight management when eating out.
Whetstone et al., 2011	1,162	Age: M 51.8 Sex: Mostly female (number not provided) Ethnicity: 75% Caucasian BMI: M 32.7 Waist Circumference: M 40.2 Weight: M 193.7 lb	Most completers (87%) decreased weight; the average was 8.4 lb (range, 0.1-44 lb). Means for BMI, weight, waist circumference, confidence in ability to be physically active, and confidence in ability to eat healthfully improved.

## Conclusion

- The results from this systematic review of literature suggest promising benefits for the use of mindful eating interventions for weight loss and weight maintenance, as well as for weight-related co-morbidities.
- Mindful eating has the potential to help individuals gain awareness of eating tendencies, which could prevent excessive calorie consumption and thereby reduce or maintain weight.
- By applying the principles of mindful eating, individuals may be able to recognize and follow internal hunger cues, rather than be driven by external cues or internal cues that are based on emotions or other non-biologically-driven cues, which may ultimately lead to weight loss and maintenance.



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