

# Impact of Non-Diet Approaches on Attitudes, Behaviors, and Health Outcomes: A Systematic Review

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## ABSTRACT

**Objective:** To determine the overall effect of non-diet, weight-neutral interventions on factors such as weight, biochemical measures, food and activity behavior, body image, and mental health.

**Design:** Systematic review of intervention literature.

**Setting:** Group classes in community and worksite settings (14 studies), and individual counseling (1) and online education (1) in college settings.

**Participants:** Eighteen research articles (representing 16 studies) evaluating non-diet interventions using quasi-experimental and randomized study designs with either a comparison or control group.

**Main Outcome Measures:** Anthropometric, physiological, psychological, and dietary intake.

**Analysis:** Systematic search of 168 articles and review of 18 articles meeting inclusionary criteria.

**Results:** Non-diet interventions resulted in statistically significant improvements in disordered eating patterns, self-esteem, and depression. None of the interventions resulted in significant weight gain or worsening of blood pressure, blood glucose, or cholesterol, and in 2 studies biochemical measures improved significantly compared with the control or diet group. Primary limitations were inconsistent definitions of non-diet approaches and the use of different assessment instruments for measuring outcomes.

**Conclusions and Implications:** Because of the long-term ineffectiveness of weight-focused interventions, the psychological improvements seen in weight-neutral, non-diet interventions warrant further investigation.

**Key Words:** non-diet, weight management, eating disorders, body image, mental health, overweight (*J Nutr Educ Behav.* 2015;47:143-155.)

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## INTRODUCTION

Dieting has become normative in Western culture, feeding a more than \$60 billion industry per year,<sup>1</sup> and includes a myriad of formal programs and plans. For many dieters, restriction by skipping meals, eliminating forbidden foods, or under-eating for the purpose of weight loss becomes a way of life. Regardless of the method used, weight loss attempts are often effective over the short-term, and yet over time weight is regained.<sup>2-8</sup> Furthermore, emerging research is showing associations with dieting and weight

gain<sup>5,7,9,10</sup> weight cycling<sup>11</sup> and disordered eating patterns.<sup>7,12</sup>

Restricting food intake leads to a repetitive pattern of self-deprivation, which can result in disordered eating such as bingeing, weight changes including weight gain, and worsening self-image.<sup>13,14</sup> Prospective studies indicate some risk factors for eating pathology including dietary restraint, perceived pressure for thinness, thin-ideal internalization, and body dissatisfaction.<sup>15</sup>

Despite mounting evidence of dieting failures, nutrition professionals continue to develop and implement

nutrition education interventions aimed at assisting audiences with weight loss. Public health nutrition campaigns in schools, worksite wellness programs, and programs at the federal level frequently emphasize weight management as necessary for improving health.

One repercussion of society's focus on weight loss is the stigmatization of and discrimination against overweight individuals<sup>16</sup> in education,<sup>17-19</sup> the workplace,<sup>20,21</sup> and health care settings.<sup>22,23</sup> Nutrition and health professionals as well as the lay public hold implicitly negative attitudes toward larger individuals<sup>24-27</sup> without regard for the genetic, environmental, and sociocultural determinants of weight and health.<sup>28</sup> Weight-based discrimination has been linked to poor body esteem,<sup>29</sup> eating disorders,<sup>30</sup> bullying,<sup>31</sup> and depression.<sup>32</sup>

There is new evidence that weight-neutral, non-diet programming may be more effective at promoting permanent dietary and physical activity

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behavior change while minimizing weight stigma than traditional approaches.<sup>2,3,33-36</sup> Non-diet-based interventions promote making healthful behavior changes, such as increased fruit and vegetable intake and increased physical activity, that result in improved fitness regardless of weight status.<sup>37</sup>

The term *Health at Every Size* (HAES), trademarked by the Association for Size Diversity and Health in 2012, is often used synonymously with the term *non-diet*. The HAES paradigm is a weight-neutral approach centered on respecting body shape and size diversity, promoting a holistic approach toward wellness, ending weight discrimination and stigma, and promoting eating and exercise based on individualized hunger, satiety, nutritional needs, and pleasure.

Other concepts used in non-diet research include the Satter Eating Competence Model<sup>38</sup> measured by the Eating Competence Satter Inventory<sup>39-41</sup> and the Eating Competence Satter Inventory for Low Income,<sup>39</sup> which assess an individual's eating attitudes, food acceptance, internal regulation, and contextual skills around planning and preparing meals and snacks; Intuitive Eating<sup>42</sup> measured by the Intuitive Eating Scale<sup>43</sup> and Intuitive Eating Scale-2,<sup>44</sup> which assess the ability to tune into internal cues of hunger and fullness; and Mindful Eating<sup>45-47</sup> measured by the Mindful Eating Questionnaire,<sup>45</sup> which focuses on present moment awareness without judgment during the eating experience.

Competent eaters are more likely to be physically active,<sup>40</sup> report eating more fruits and vegetables,<sup>40</sup> have higher high-density lipoprotein (HDL) cholesterol and lower blood pressure,<sup>48</sup> have a lower body mass index, and be more content with body weight.<sup>40</sup> Intuitive eaters tend to enjoy a variety of foods, have better self-esteem and overall psychological well-being, and are less likely to internalize the thin ideal.<sup>44,49-51</sup> In addition, intuitive eaters are less likely to engage in binge eating<sup>14,52,53</sup> eat when they are anxious or stressed,<sup>54</sup> or exhibit eating disorder symptomatology.<sup>50</sup>

Many researchers have been implementing non-diet interventions and assessing their effects on anthropometrics, cholesterol, blood pressure, body image, depressions, stress,

dietary restraint and disinhibition, dietary quality, and physical activity.<sup>23,33,34,36,55-67</sup> The aim of this research was to conduct a systematic review to synthesize the peer-reviewed literature evaluating non-diet interventions to determine their effectiveness. Results are intended to guide the development of more effective intervention efforts and provide directions for future research.

## METHODS

### Literature Search

An initial search was conducted by a single author using the key terms *Non-diet*, *Intuitive Eating*, *Health at Every Size*, and *Mindful Eating* in the following databases over the course of a week from July 14 to July 20, 2013: Academic Search, Cumulative Index to Nursing and Allied Health Literature Plus, PubMed, and ScienceDirect. In addition, researchers searched for studies previously known to the authors and used backward searching from references of selected studies from July 15 to August 21, 2013. From these additional search methods, other studies were included that did not result from the search of key terms. No date cutoff criteria were established when searching, and the oldest study used was from 1998 (Figure).

### Inclusion and Exclusion Criteria

Criteria for inclusion in the review were quasi-experimental or randomized study designs evaluating non-diet interventions with either a comparison or a control group. In addition, included studies were all published in English and involved human subjects. Studies were excluded if they were not published in full-text in peer-reviewed journals.

### Selection and Review Process

The review process paralleled that of the PRISMA systematic review process.<sup>68</sup> Full articles of the selected studies were retrieved and the authors divided up and individually reviewed all studies that met the inclusion criteria. A summary table was created in which each author documented study design, dose, duration and follow-up if applicable, sample size, non-diet concepts used, and anthropometric, physiolog-

ical, psychological, and dietary intake outcome measures reported from the studies they reviewed (Table 1). Upon completion of this process, each author read and reviewed all studies to verify the key findings. Once the summary table was complete, 1 author verified all table data. Two authors reviewed full articles of the selected studies and reported individual findings of each outcome measure (Table 2). Both between- and within-group comparisons were reported comparing the non-diet group with either a diet group or a control group. If a study had 3 groups (non-diet group, diet group, and control group), comparisons between the non-diet group and the diet group were documented in Table 2. All significant and non-significant findings are reported in Tables 1 and 2. A third author reviewed the articles, and if there were discrepancies between the 2 completed tables, additional review was conducted to resolve the differences. All authors reviewed Table 2 for errors. Finally, to ensure accuracy, 3 authors reviewed the studies included in the analysis and summarized the overall findings, as evident in Tables 1 and 2. The summaries of findings from the 3 authors were compared and commonalities informed the overriding conclusions and implications for future research. Because of the diversity of study designs, outcome measures, non-diet approaches and intervention lengths, authors conducted a qualitative assessment of the current evidence.

## DISCUSSION

A total of 168 abstracts were identified through the initial search. Once reviewed, 26 were categorized as intervention studies, 16 of which met the selection criteria and 10 of which were excluded because they were not quasi-experimental or randomized designs involving human subjects, did not include a control or comparison group, contained language consistent with a diet approach, or were not published in full text in peer-reviewed journals. The authors found 2 additional manuscripts that were not in the original search. The 18 research articles represented a total of 16 studies.<sup>2,3,33,34,36,55,57-67,69</sup> Of the 16 studies, 14 were randomized

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