Weight Loss Maintenance

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Successful long-term weight loss maintenance can be achieved by various means. A combination of dietary and physical activity interventions, along with one or more behavioral approaches, has proven successful in some persons, as documented by the National Weight Control Registry, but is limited by adherence to a consistent weight loss regimen. Successful approaches to weight loss maintenance include consulting with a physician, nutritionist, or another support source; adhering to a stable diet with a limited variety of food; monitoring weight; eating breakfast; and exercising regularly. Long-term pharmacologic treatments for weight loss maintenance have been studied and were found to have modest success, with some weight regain typically reported. Sibutramine and orlistat are the two medications approved by the U.S. Food and Drug Administration with the potential to help patients achieve long-term weight loss maintenance. Bariatric surgery is another modality for accomplishing successful long-term weight loss maintenance in patients with morbid or complicated obesity. Its success is due in large part to better weight loss outcomes, more successful long-term weight loss maintenance, and remission of comorbid medical conditions. (Am Fam Physician. 2010;82(6):630-634. Copyright © 2010 American Academy of Family Physicians.)

Obesity is now recognized as a serious chronic disease. Approximately 65 percent of adults in the United States are overweight or obese. Almost one half of the adult population is trying to lose weight at any given time. Although losing weight can be very difficult, the real challenge often is maintaining the weight loss. Many dietary patterns and programs have demonstrated successful short-term weight loss. However, successful weight loss maintenance is not so widespread. Research has shown that approximately 20 percent of overweight or obese persons are successful at long-term weight loss.

Successful weight loss maintenance is defined as losing at least 10 percent of one's initial body weight and maintaining the loss for at least one year. Reviewing the key aspects of this definition, intentionality is important because unintentional weight loss is often the harbinger of other disease conditions, the causes of which have been summarized elsewhere. The 10 percent threshold was initially suggested because weight loss of this magnitude can lead to statistically significant improvements in lipid ratios, blood glucose homeostasis, and risk of heart disease, all of which have been well-documented. However, this 10 percent threshold is not always used by researchers in determining successful weight loss when other comorbidities (e.g., type 2 diabetes mellitus) are present. The one-year criterion for the definition of successful weight loss maintenance was selected based on criteria from the Institute of Medicine, and using this criterion may stimulate research on how persons who have maintained their weight loss for one year can continue to maintain it for longer intervals.

Lifestyle Factors

Long-term adherence to a diet and exercise program is the key to success. Many well-known weight loss authors and researchers have studied this particular issue, yet few have published data in support of their unique dietary recommendations. The well-known Atkins diet (i.e., the prototype high-fat, low-carbohydrate diet) has its own maintenance-phase diet plan, promoting reintroduction of “good” carbohydrates back into the diet. The South Beach Diet has a similar maintenance phase. Few, if any, large and randomized controlled trials (RCTs) exist that demonstrate a 10 percent weight loss and maintenance over a one-year period for these or any other

Patient information: A handout on weight loss maintenance, written by the authors of this article, is provided on page 637.
commercial-based diets. One study confirmed that a very-low-calorie diet (i.e., less than 800 calories per day) did not outperform a self-guided dietary approach in achieving weight loss maintenance.

The National Weight Control Registry (NWCR) is the longest prospective compilation of data and information from persons who have successfully lost weight and maintained their weight loss. The NWCR is tracking more than 5,000 persons who have lost significant amounts of weight and kept it off for at least one year. Detailed questionnaires and annual follow-up surveys are used to examine the behavioral and psychological characteristics of weight maintainers, as well as the strategies they use to maintain their weight loss.

The NWCR participants have achieved long-term weight loss by a variety of means (Table 1). More than one half (55.4 percent) of registry participants reported receiving some type of help with weight loss (e.g., commercial weight loss program, physician, dietitian or nutritionist), whereas the other participants (44.6 percent) reported losing weight entirely on their own. The most common dietary strategies for weight loss were to restrict certain foods (87.6 percent), limit food quantities (44 percent), and count calories (43 percent). Regardless of the diet employed, the strategy for successful weight loss maintenance usually entailed dietary modification plus physical activity.

Corroboration of the NWCR findings regarding diet and exercise as the foundation for successful weight loss maintenance is replete in the scientific literature. Research has determined that certain strategies, such as weighing oneself, planning meals, tracking fat and calories, exercising at least 30 minutes daily, and adding physical activity into one’s daily routine, are important in successful weight loss maintenance. Barriers to exercise (e.g., being too tired, having no time or no one with whom to exercise, finding it too hard to maintain an exercise routine) were associated with being unsuccessful at losing weight. Thus, time pressure and lack of social support seem to be important hindrances in achieving exercise-related goals. Reducing consumption of fast foods can also assist persons in keeping weight off.

In another study, researchers analyzed more than 2,000 NWCR participants’ variety of foods consumed within different food groups via a food-frequency questionnaire. The findings suggest that successful weight loss maintainers consume a diet with limited variety in all food groups. Therefore, restricting variety within all food groups may help with consuming a low-calorie diet and maintaining long-term weight loss.
consistency and a low frequency of dieting also seem to enhance successful weight loss maintenance. Thus, persons who maintain a stable day-to-day diet and do not appreciably change their diet on weekends, holidays, or special occasions tend to experience less weight regain over the subsequent year and are 1.5 times more likely to maintain their weight loss.18,19

Just as there are predictors of weight loss maintenance, there are predictors of weight regain. The single best predictor of increased regain risk among NWCR participants was how long they had successfully maintained their weight loss. Persons who had kept their weight off for at least two years were far more likely to maintain their weight over the following year.4

Another predictor of success or failure among NWCR participants was their level of dietary disinhibition (i.e., loss of restraint).4 Akin to a temporary loss of control of eating, dietary disinhibition facilitates periods of overeating or overindulgence. Dietary disinhibition has been measured using the Eating Inventory (i.e., Three-Factor Eating Questionnaire), which assesses three aspects of eating behavior: cognitive restraint, uncontrolled eating, and emotional eating.20,21 Before treatment, higher restraint scores were associated with lower body weights (P = .02), whereas higher disinhibition scores were associated with greater binge eating severity (P < .0001). Weight loss treatment was associated with statistically significant increases in restraint (P < .0001) and decreases in disinhibition and hunger (P < .0001). Greater increases in restraint during treatment were associated with larger weight losses (P < .0001).20,21

Behavioral issues are important to the discussion of weight loss maintenance. Brief, monthly personal contact between patient and physician or patient and educator has been shown to be more effective in accomplishing weight loss maintenance than other methods of interaction, including Web-based technology.22,23 Physicians can assist their patients with maintaining weight loss by reinforcing healthy dietary and exercise habits; regularly monitoring weight, body mass index (BMI), and waist circumference; encouraging additional support from nutrition counseling and cognitive behavior therapy, when indicated; and addressing other risk factors for weight regain.24

Social support, better coping strategies, and the ability to handle life stressors are factors associated with successful weight loss maintenance.25 Disinhibited eating, binge eating, more intense hunger, eating in response to negative emotions and stress, passive reactions to problems, and less assumption of responsibility in life are all factors posing a risk of weight regain. On the other hand, strong internal motivation to lose weight, self-efficacy (defined as greater confidence in achieving successful weight loss), and a sense of autonomy contribute to successful weight loss maintenance.25 Food journaling is an additional proven strategy for short-term weight loss and successful weight loss maintenance.25 A summary of behavioral strategies contributing to successful weight loss maintenance is shown in Table 2.25

Pharmacotherapy
Pharmacologic treatment may be considered as an adjunct to lifestyle changes in patients who have not lost at least 1.11 lb (0.5 kg) per week after three to six months of implementing lifestyle changes alone.24 Orlistat (Xenical) and sibutramine (Meridia) are the only medications approved by the U.S. Food and Drug Administration for long-term use in treating obesity. Several RCTs confirm the utility of these medications in helping maintain weight loss.26-32 Indications for pharmacotherapy are a BMI of at least 30 kg per m², or a BMI of at least 27 kg per m² in patients with weight-related comorbidities.24

SIBUTRAMINE
In the Sibutramine Trial of Obesity Reduction and Maintenance, 500 participants who lost more than 5 percent of their initial body weight (mean weight loss = 25.11 lb [11.3 kg]; range of 10.0 to 72.2 lb [4.5 to 32.5 kg]) were treated with 10 mg of sibutramine or placebo in the weight maintenance phase, which lasted for 18 months.26

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<th>Table 2. Behavioral Factors Pertaining to Weight Loss Maintenance</th>
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<td>Factors associated with successful weight loss maintenance</td>
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<td>Establish a social support network</td>
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<td>Limit or avoid disinhibited eating</td>
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<td>Avoid binge eating</td>
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<td>Avoid eating in response to negative emotions and stress</td>
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<td>Be accountable for one’s decisions</td>
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<td>Foster a strong sense of autonomy, internal motivation, and self-efficacy toward weight loss maintenance</td>
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<th>Risk factors associated with weight regain</th>
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<tr>
<td>Disinhibited eating</td>
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<td>Binge eating</td>
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<td>Periods of excessive hunger</td>
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<tr>
<td>Eating in response to negative emotions and stress</td>
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<td>Passive reactions to problems</td>
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Information from reference 25.
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Sibutramine was titrated upward to 20 mg in those who began regaining weight. In the treatment groups, weight regain started at 12 months of follow-up; at the end of 18 months, more than 80 percent of lost weight was maintained ($P < .001$). In contrast, the placebo group regained weight two months into follow-up, and they regained nearly 80 percent of their weight loss by month 18. The overall rate of responders, keeping in mind the high dropout rate in both arms, was 43 percent in the treatment group versus 19 percent in the placebo group. An additional study showed that more than 80 percent of the weight loss achieved with the use of very-low-calorie diets was maintained at months 6, 12, and 18 by 70, 51, and 30 percent of sibutramine-treated patients, respectively ($P \leq .03$), compared with 48, 31, and 20 percent of patients in the placebo group.

ORLISTAT

In a four-year, double-blind, prospective European study (n = 3,305), 26.2 percent of patients taking orlistat who did not discontinue treatment kept off 10 percent of their initial body weight after four years, compared with 16 percent of patients in the placebo group ($P < .001$). Similarly, a three-year study concluded that orlistat was superior to placebo in maintaining initial weight loss after the use of very-low-calorie diets. A two-year RCT found that participants treated with orlistat maintained two thirds of their weight loss ($P < .001$).

Bariatric Surgery

The scientific literature strongly supports that successful long-term weight loss maintenance can be achieved with bariatric surgery. As early as the mid 1990s, gastric bypass was clearly shown to result in long-term weight loss. In 2002, a review was published on the varying degrees of weight loss maintenance success with different types of bariatric surgeries, concluding that “bariatric surgery offers the best treatment to produce sustained weight loss in patients who are morbidly obese.” Additional studies also have found that gastric bypass (Roux-en-Y procedure) is the best surgical option for inducing weight loss and maintaining long-term weight loss in morbidly obese patients. Better weight loss outcomes and remission of several comorbid medical conditions are more common following bariatric surgery. Bariatric surgery may be considered if other weight loss attempts have failed, bearing in mind the postsurgical necessity of lifelong medical monitoring. To be considered for surgery, a patient needs to meet BMI criteria for being morbidly obese, which, according to an updated classification system, includes patients with a BMI of at least 40 kg per m$^2$ (obesity class III), or at least 35 kg per m$^2$ (obesity class II) in the presence of comorbidities.

Despite the positive surgical results, RCTs comparing surgical and nonsurgical approaches are lacking. A recent prospective case-control comparison of surgical and nonsurgical methods in NWCR participants demonstrated no statistical difference between either method in achieving weight loss maintenance. This suggests that behavioral changes can achieve the same results as surgical interventions when patients are sufficiently motivated and supported.

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