

James Hill, PhD, and Rena Wing, PhD, discuss lessons from patients who have lost and sustained significant weight loss

The National Weight Control Registry

By James Hill, PhD; Rena Wing, PhD

Introduction

We want to share some things we have learned from a unique group of people: “successful losers,” as subjects in the National Weight Control Registry like to be called. As we know, our major challenge in treating obesity is not losing weight but keeping it off—and participants in the National Weight Control Registry have taught us a lot about how to maintain weight loss.

Defining Success

Let’s start by defining successful obesity management. Most people are gaining weight, and if we do nothing, the weight of the population will continue to increase. Moreover, the heavier people are probably gaining weight at a slightly higher rate—and if we do not help our overweight or obese patients, they will probably become even more overweight or obese. Thus, one measure of weight management success would be to stop the weight gain: Just by doing this, we might prevent development of diabetes in many patients.

Weight normalization by obese people is rare. Therefore, a second goal for obesity management would be to help patients achieve modest weight loss, which we may define as losing 5% to 10% of the patient’s initial weight. Substantial data show clear health benefits from such weight loss. Most patients with body mass index (BMI) above 30 kg/m² will not reduce their BMI to below 25 kg/m² and will not achieve the same success as achieved by subjects in the National Weight Control Registry, who are exceptional people.

Losing Weight

Although the popular media encourage the perception that almost no one succeeds at long-term weight loss—a 99% failure rate is the figure perpetuated most commonly—we are getting better at helping people achieve weight loss sufficient to greatly improve their health. We have come a long way in using protocols—structured, skill-based, group, and individual—to produce lifestyle change. One great example is the

recent Diabetes Prevention Program,¹ in which a 7% weight loss in overweight and obese persons at high risk for diabetes was associated with a 58% reduction in this risk. This finding illustrates the benefit of modest weight loss.

Maintaining Weight Loss

What do we currently know about maintaining weight loss? Most of what we know comes from university-based weight loss programs; with some exceptions, commercial programs neither collect nor publish data showing the results achieved by clients. Consequently, we generally know little about the way real-world people maintain their weight loss. Much of what we know has been learned from people who lose but then regain weight—ie, those who have failed at weight loss maintenance.

If successful weight loss is defined as intentionally losing 10% of initial body weight and not regaining it, we can say that 20% of overweight and obese people in the United States have lost weight successfully. But a 20% success rate still isn’t very good; therefore, whatever criteria for success are used, we must accept one major truth: To ensure that our ability to manage obesity reaches the necessary level of effectiveness, we must improve our methods.

Why are so few people successful at long-term weight maintenance? We argue about whether this lack of success is caused by our physiology or by our behavior, but the reason is probably a combination of both factors. Physiology certainly plays a role in obesity, but substantial data show that people can make behavior changes allowing them to achieve and maintain a healthy body weight. I believe that our lack of success in getting more people to make and achieve this change has two causes: We focus too much on diet and not enough on physical activity; and we focus too much on losing weight and not enough on keeping it off. Results from the National Weight Control Registry are presented here to illustrate these points.



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The National Weight Control Registry

The group of people described here participated in the National Weight Control Registry, a database founded by myself and Dr Rena Wing, a behavioral psychologist at Brown University. Together, we set out to see if we could find—and learn from—people who were successful at long-term maintenance of weight loss. Our study was not a randomized controlled trial (people self-selected to participate in the study), and most of our data were obtained from self-reports of participants; these features are limitations of our work, as is our inability to determine whether participants in the National Weight Control Registry are a biologically unique group whose results do not apply to others trying to achieve weight control. Despite these potential limitations, however, I think the information obtained from these subjects can be useful for clinicians treating overweight or obese patients.

The criterion for joining the National Weight Control Registry is maintenance of at least a 30 lb (6.6 kg) weight loss for at least one year, which I think most people would agree represents some measure of success.

Our purposes in establishing the National Weight Control Registry were 1) to identify a large group of people who successfully maintained weight loss; and 2) to quantitatively describe strategies used by these people to achieve and maintain weight loss.

The 4000 participants in the National Weight Control Registry have a number of characteristics in common that can be effectively used by those helping others to lose weight. Because our study was not a randomized, controlled study, we cannot be certain that the characteristics shared by registry participants contributed to the success of weight loss; however, we believe that the strategies used by these subjects to maintain their weight loss are sensible and could be used by others to help themselves achieve and maintain weight loss more successfully.

Weight Loss Study Results

Most subjects in the National Weight Control Registry are white women; men comprise only 20% of participants, and few minorities are represented. Most subjects are aged 44 to 49 years.

Most participants gained weight early in life. Forty-six percent were overweight by age 11 years, a quarter became overweight between ages 12 to 18 years, and 28% became overweight as adults. Forty-six percent of participants had one parent who was overweight, and 27% reported that both parents were overweight. Thus, many participants have an obesity

history predicting metabolic propensity to obesity and resistance to treatment.

Most registry participants (90%) reported previous attempts at weight loss. For most participants, these attempts consisted of weight loss followed by weight regain. Few participants successfully lost weight and maintained the weight loss on the first attempt. Most registry participants had used numerous popular diet programs.

How much weight did participants lose? The mean weight loss among all registry participants was 30 kg (66 lbs). Men lost slightly more weight than did women. The group maintained weight loss for a mean 5.5 years.

We could identify few commonly shared features of how these people lost weight. The only common characteristic was that 89% of registry participants used both diet and physical activity to lose weight: only 10% used diet alone, and 1% used exercise alone. This finding is very important because most weight loss programs focus primarily on dietary restriction. We could not identify any successful diet common to these people: Many reported that they restricted their intake of certain foods; some participants stated that they restricted the amount of food consumed; some participants counted calories or grams of fat consumed; some used prepackaged liquid formulas; and some used different kinds of exchange diets. We could not find factors common to the diets used by registry participants for weight loss. We studied people who lost weight on their own as well as people who lost weight by participating in a formal program. We found no major differences in outcome between these two groups. Women appeared to prefer a more formal program, whereas men preferred to lose weight on their own.

Motives reported by participants for losing weight showed little commonality: Some participants reported that they lost weight for health reasons; some, for lifestyle reasons (eg, to improve appearance in preparation for a wedding or class reunion); and some, for emotional reasons (eg, after a child asked why mommy was fat). In contrast, methods for maintaining weight loss had several factors in common. This difference in commonality suggests that the two processes—losing weight and maintaining weight loss—may have important differences. In particular, the optimum strategy for successful weight loss may differ from the optimum strategy for successfully maintaining weight loss.

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Behavioral Factors

We found four types of behavior common to the National Weight Control Registry participants: 1) eating a low-fat, high-carbohydrate diet; 2) eating breakfast almost every day; 3) frequent self-monitoring of weight; and 4) participation in a high level of physical activity.

Information about food intake was determined from questionnaires asking respondents to describe their intake of various foods. Although a great deal of error exists in self-reports of food intake, this method of data collection can provide some indication of usual diet. Registry participants almost certainly underreported their total energy intake, although this phenomenon is not uncommon among other populations of questionnaire respondents. Registry participants reported consuming 1300 to 1500 calories per day, of which 23% to 24% came from fat. This underreporting probably characterized total energy intake as well as energy intake from fat. Nonetheless, these subjects probably were consuming a relatively low-fat diet. Participants also reported that, on average, they ate out at fast-food establishments about once per week and ate four or five times per day.

The second characteristic common to these subjects was that they tended to eat breakfast regularly. This finding did not surprise us, but we were surprised that most registry participants ate breakfast every day without exception. Starting the day with breakfast may therefore be even more important for weight maintenance than previously thought.

A third characteristic relates to a controversial issue: Participants reported that they self-monitor their weight regularly. Many people recommend against relying on the scale to achieve weight loss, but we found that registry participants weighed themselves frequently: 75% of participants weighed themselves at least once per week, and many weighed themselves daily. Frequent weighing may therefore serve as an “early warning system” for these people. I suspect that when they have gained a few pounds, they implement strategies to prevent further weight gain. Although this possibility represents speculation, many participants told us that they have a plan for what to do if the scale reaches a certain number. Other studies have found that self-monitoring predicts success in long-term maintenance of weight loss.

The final common behavior among registry participants was that they engaged in extensive physical activity. As reported by participants, the mean energy they expended in physical activity was 2500

kcal/week for women and 3300 kcal/week for men. This level of physical activity is very high and equates to about 60 to 90 minutes of moderate-intensity physical activity per day.

Type of Physical Activity

Only 9% of registry participants reported keeping their weight off without engaging in physical activity. Substantial weight loss can be maintained with diet alone but occurred rarely in this group. Walking appeared to be the most popular form of physical activity, but most people also engaged in some planned exercise. Twenty-eight percent of participants used only walking as their chosen form of physical activity, and about half combined walking with another form of planned exercise (eg, aerobics classes, biking, or swimming). To quantify the walking done by this population, we placed pedometers on a sample of registry participants and found that, on average, they took between 11,000 and 12,000 steps per day—about 5.5 to 6 miles per day. Thus, these people exceeded by far the minimum physical activity recommended by the US Surgeon General.

Although we can confidently state that a great deal of physical activity is necessary to maintain substantial weight loss, our data does not necessarily help us to establish guidelines for the amount of physical activity necessary for primary prevention of weight gain. The Dietary Reference Intake (DRI) Committee of the National Academy of Sciences recently increased its recommendation for physical activity to 60 minutes daily;² for comparison, the US Surgeon General’s recommendation is for 30 minutes of physical activity daily.³ No current data shows how much physical activity is required to prevent weight gain in people who have never been obese.

We also asked whether this group showed any signs of “metabolic abnormality” that might be a factor contributing to weight regain. We measured resting metabolic rate and body composition in a group of 50 National Weight Control Registry participants and in 50 matched, never-obese control subjects. Because resting metabolic rate varies with lean body mass, we determined the regression line for this relation in each group. We found no difference between groups, a result suggesting that resting metabolic rate in registry participants was appropriate for their fat-free body mass. We thus found no indication that registry participants had a low resting metabolic rate that could predispose them to regaining body weight.

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Quality of Life

We asked participants how weight loss had affected their overall quality of life. Almost all participants (95%) reported that their overall quality of life was improved after weight loss.

To summarize, almost all patients who successfully maintained long-term weight loss used both diet and physical activity to lose weight. These people also shared strategies for maintaining the weight loss: eating a low-fat, high-carbohydrate diet; eating breakfast almost every day; weighing themselves frequently; and engaging in 60 to 90 minutes per day of moderate-intensity physical activity. Although we do not know for certain, we think that this behavior probably led to their success in keeping weight off. These characteristics could be effectively used as components of programs for helping overweight and obese people to achieve and maintain weight loss.

Patients who qualify for the National Weight Control Registry can enroll online at www.nwcr.ws. We hope people will be motivated to realize that if they can maintain loss of at least 30 lbs (6.6 kg) for at least one year, they can join this group.

After the presentation, Dr Hill answered questions from the audience:

Question: *What about patients who lose weight with bariatric surgery—how do they lose weight compared with people who lose weight through behavior change?*

Answer: We conducted a study⁴ in which a group of people who lost weight from bariatric surgery were compared with a matched group of registry participants. People who had bariatric surgery reported a much-higher-fat diet and engaged in much less physical activity than registry participants reported. Therefore, I believe that bariatric surgery affects metabolism differently than the way lifestyle change influences weight loss.

Question: *What is the role of naturopathy, herbs, or other alternative strategies in weight management?*

Answer: We have not looked at the role of complementary and alternative medicine in the National Weight Control Registry. However, I am skeptical about much of this kind of material because I have not seen any

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scientific studies suggesting its usefulness for weight management. To be fair, however, few scientific studies on this topic have been done. We certainly need some research studies before we can conclude that naturopathy is useful for weight management. ❖

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