



Health Connections

LINKING NUTRITION RESEARCH TO PRACTICE

WEIGHT-LOSS MAINTENANCE: The Ultimate Goal

“How much should I weigh?” was Ask.com’s top question of 2009.¹ Most Americans are either trying to lose weight (53 percent) or maintain their weight (25 percent).² Lifestyle modifications have proven difficult; those successful at weight loss have had to make dramatic changes in food intake and physical activity, not just to lose weight but to keep from regaining. If history is any indication, consumers will continually seek and undertake popular weight-loss diets. This issue of *Health Connections* discusses the need to shift the focus away from weight loss per se to *maintenance* of a healthy weight.

Energy Balance — The Core of Weight-Management Efforts

Body-weight changes from national surveys (NHANES 1971 – 1976 and 1999 – 2002) and food-supply data for those same years suggest that the increase in food energy available for consumption is sufficient by itself to explain the increase in weight in the United States population.³ To return to mean body weights of the 1970s, a reversal of 500 kcal/d for adults (350 kcal/d for children), or large compensatory increases in physical activity (150 min/d of walking for adults or 110 min/d for children) or a combination of both would be needed. Weight-loss diets often reduce energy intake between 500 – 1,000 kcal/d. To produce this much energy imbalance through physical activity alone may be difficult, particularly for sedentary individuals.⁴

The energy gap estimates the amount of change in food intake and physical-activity behaviors needed to achieve different body-weight outcomes, whether for prevention of excessive weight gain, weight loss or maintenance of weight loss.^{5,6} The average American adult gains weight gradually—about 1 to 2 pounds a year. The difference between the energy intake and energy expenditure that produces this rate of weight gain is small on a

daily basis—about 100 kcal. Thus, the energy gap for *preventing* weight gain is small because it estimates the degree of behavioral change required to *not gain additional weight*, regardless of whether the person is *lean, overweight or obese*.⁵ In contrast, the energy gap to maintain a specific amount of weight loss requires significantly lower food intake and/or greatly increased physical activity, because energy requirements decrease proportionally with a decrease in body mass.⁶ Therefore, stopping gradual weight gain when it is feasible with smaller behavior changes in either or both food intake and physical activity become important weight-management strategies (see Side Bar).

The Food-Intake Side of the Equation

Different types of hypocaloric diets can produce meaningful weight loss in the short term regardless of the macronutrient emphasized.⁷ Research, however, indicates that macronutrients influence *food intake* by impacting taste, mouth feel, chewing time, stomach distention, digestibility, rate of absorption, hormonal levels and metabolic signals. Since macronutrients affect satiation (controlling food intake/meal size or intrameal regulation) and satiety (subsequent hunger and eating or intermeal regulation), they can affect total calorie intake—and thus, weight gain or loss.

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Diets high in protein and/or low in energy density may increase satiety (see http://www.dairycouncilofca.org/PDFs/hc_summer04.pdf). The satiating effect of protein, compared with carbohydrate, appears to be greatest when assessed over several hours—such as time between meals. For example, consumption of fat-free milk at breakfast, compared with a fruit drink, led to increased satiety and decreased calorie intake at lunch. The researchers noted that milk’s protein content (particularly whey) or the viscosity/thickness of the beverage may have contributed to satiety benefits.⁸ (For more information on protein, see http://www.dairycouncilofca.org/PDFs/hc_Spring09.pdf.)

The Physical-Activity Side of the Equation

Activity guidelines under consideration by the 2010 Dietary Guidelines Advisory Committee state that everyone should avoid inactivity and that some physical activity is better than none. These guidelines vary in time, intensity and goals, depending on whether the goal is to achieve health benefits (such as cardiovascular fitness), prevent weight gain, facilitate weight loss or prevent weight regain.⁹ For weight stability, research indicates 150 to 300 minutes (2.5 to 5 hours) per week are needed. Those wishing to lose more than 5 percent of body weight and those trying to keep a significant amount of weight off once it has been lost require a high amount of physical activity—more than 300

minutes (5 hours) per week of moderate-intensity activity—unless they also reduce caloric intake.

Such guidelines may seem daunting to consumers accustomed to thinking of minutes per day or week as they relate to planned exercise such as cycling, running, swimming or tennis. It is difficult to quantify lifestyle activities such as walking, gardening, taking stairs, parking away from the closest building entrance and other activities that are generally spread throughout the day in small increments.

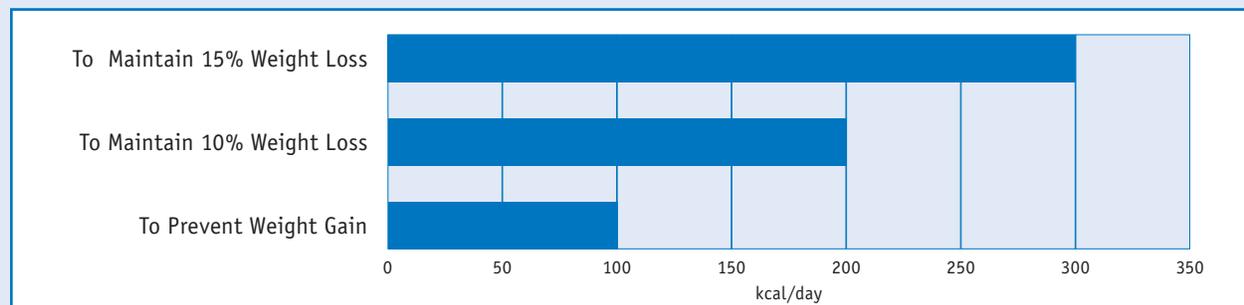
Physical activity could be a strong predictor of success in weight-loss maintenance because it is a marker for compliance.⁶ If so, consumers will need help ‘quantifying’ their daily activities. MyPyramid Tracker (www.mypyramid.gov), smart-phone applications and other technological devices may help. An analysis of over two dozen different studies (mean intervention duration of 18 weeks) on pedometer use suggests that, on average, pedometer users increased their physical activity by over 2,100 steps per day over baseline and lowered their BMI. An important predictor of increased physical activity was having a step goal that provided both a baseline to target and motivation to gradually exceed. Small lifestyle changes—such as 2,000 steps walking—burn about 100 kcal, an amount sufficient to close the energy gap to slow or prevent weight gain in most people over time.

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SIDE BAR — THE IMPORTANCE OF PREVENTING WEIGHT GAIN

The behavior change to close the energy gap and prevent weight gain is comparatively smaller and thus more feasible than the behavior change required to maintain a 10 – 15 percent weight loss.



Source: Modified and reprinted with permission from Hill.⁶

Interview — James O. Hill, Ph.D., Director, Center for Human Nutrition, University of Colorado Health Sciences Center and Founder, National Weight Control Registry

Q. Why do you consider permanent weight control a learning process?

A. Successful dieters analyze what leads to relapse/failure and incorporate those insights into future behavior. They catch 'slips' before they turn into larger regains. Eventually, their mark of success is that they no longer diet—they figure out the lifestyle modifications they can live with and stick with them.

Q. How do those of normal weight—who have no history of obesity—manage to “live lean” in a toxic environment?

A. Approximately one-third of the population maintains a healthy weight. In one of our Registry sub-studies, we are comparing successful weight losers with normal-weight people to find out how they are managing to maintain a normal weight in our obesity-promoting world. With the exception of the few with genetic protection, the rest are working hard not to be obese. Like those successful at weight maintenance, they pay attention and monitor themselves on a regular basis relative to physical activity and food intake.

Q. How can health professionals use the ‘energy gap’ concept to individualize behavioral strategies for weight-loss maintenance?

A. Consumers may have no idea how to turn generic advice to eat less and do more into specific behaviors. The energy gap is like a reality check for both health professionals and their clients, relative to expectations and what can be achieved. The energy gap quantifies how much eating and physical-activity behavior change is needed to achieve a desired goal. If the energy gap is estimated to be 300 kcal/d, (approximately the amount to maintain a 15 percent weight loss), this becomes a target for behavior change. Health professionals then assist clients to achieve this goal by identifying ways to expend 300 kcal/d in additional activity, reduce food/energy intake by that same amount, or some combination of both intake and expenditure.

Whether the food-intake or physical-activity side of the energy-balance equation is the major driver of obesity has been both researched and debated—this is not a smart argument. Relying on weight management through food restriction alone can result in consumers obsessing over every morsel—taking all the enjoyment out of eating. Physical activity is absolutely critical in the energy-balance equation—we simply cannot be as sedentary as we are and have a chance

at maintaining a healthy weight. Participants in the National Weight Loss Registry (those who have lost at least 30 pounds and kept it off for a year) engage in high levels of physical activity—on average about 1 hour per day—with walking the most frequently reported activity. The majority of registrants watch less than 10 hours of television a week (www.nwcr.ws/Research/default.htm).

Q. What are some advantages to using a ‘small changes’ approach to weight management?

A. Efforts to make large changes in diets have not been that successful and have required major behavioral changes on the part of the consumer. Small changes to prevent additional weight gain are more feasible to maintain and could lead to and help achieve larger behavior changes as individuals gradually add more and more small changes that result in an increased cumulative effect.

In addition, small changes by food manufacturers and restaurants—through portion sizes or product/recipe formulation—can help change energy intake without consumers needing to make dramatic changes in food intake. When small changes undertaken by consumers are supported by efforts in both the public and private sectors, we can gradually ‘ratchet down’ some of the environmental forces that have contributed to over consumption and inactivity and hopefully stabilize obesity rates.



James O. Hill, Ph.D.

Practice Points for the Health Professional

- Encourage clients to eat breakfast to reduce hunger and spread out calories over the day. A survey found that feeling full after breakfast is important to consumers trying to lose weight because they want to make it to lunch without getting off track.¹¹
- Stay abreast of new research linking specific foods and/or dietary components such as protein, whey protein and satiety to weight-management efforts.
- Help clients set realistic goals. Studies report that those entering weight-loss treatment programs expected to lose more than 30 percent of their body weight—exceeding by far a more modest loss of 5 – 10 percent, which could still confer health benefits. Studies suggest that unrealistic weight-loss expectations contribute to poor weight-loss outcomes and poor long-term maintenance.¹²
- Help clients target a healthy weight rather than a weight tied to desired appearance. Compared to a control group, participants using a ‘Health-at-Every-Size’ approach experienced sustainable improvements in eating behaviors related to disinhibition and hunger and maintained a lower body weight at 1-year follow-up compared to baseline, even if no energy restriction was suggested.¹³
- Continually communicate to clients, colleagues and media that small, practical changes are the norm, are achievable and can halt weight gain in most people.
- Encourage clients to become permanently and habitually more active through their daily lifestyle activities rather than considering physical activity only as “planned exercise.”