wls Weight Loss Specialist

CHAPTER 9: WEIGHT MANAGEMENT MYTHS

Objectives

After completing this section, the health and fitness professional will be able to:

- Understand how weight management myths are developed.
- Be familiar with common fallacies associated with weight management.
- Educate current and prospective weight loss clients on the truths of common weight management myths.

Introduction

The world of nutrition is full of controversy, both disagreements within the scientific community and discrepancies between media reports, which are often marketing-driven. Nowhere is this dissension more evident than in the topic of weight loss and dieting. With each week, there seems to be a new diet that promises patrons they will lose unwanted fat, inches, or pounds. The media reports that a food is a miracle cure one week, and then that it is almost criminal the next week. A large part of this confusion comes from the relationship between science and media that report on it. Many of these apparent "flip-flops" can be explained by how popular media interpret and report on a particular study.

In March 2006, *Newsweek* ran a cover story titled "Diet Hype: How the media collides with science" (1). The article detailed the abundance of health news and the resulting widespread confusion about diet and nutrition, noting "from 1977 to 2004, the number of newspaper front-page stories on science tripled, from 1% to 3%, while foreign affairs coverage plummeted from 27% to 14%. In news magazines, the number of pages devoted to health and medical science has quadrupled since 1980. In 2005, 10 out of 50 *Newsweek* cover stories were on such health issues as lung cancer, autism, and heart disease."

One of the challenges for popular media is capturing complex study results, or subtle details of research methodology, in a magazine-selling headline. The result? The nutrition "flip-flop" (i.e., yesterday nuts made you fat; today they decrease the risk of cancer). This chapter reviews some of the more popular myths and controversies, and demystifies them with current research when available.

High-Protein/Low-Carbohydrate Diet

Probably more widely debated than any other diet in scientific and consumer literature is the high-protein/low-carbohydrate diet. These plans have been a part of diet lexicon since the mid-1800s, with William Banting's *Letter on Corpulence* (2). Billed as the "world's first diet book," Banting's work recommended

eating lots of meat, a few vegetables, and avoiding foods that he previously overconsumed.

Today the term "low-carb diet" is often thought of as synonymous with the Atkins diet, named after cardiologist Dr. Robert Atkins. Also known as just "Atkins," the diet restricts carbohydrate consumption by eliminating most carbohydrates (rice, bread, pasta) and replacing them with meats, poultry, eggs, and dairy products. Atkins popularized his work in a series of books, starting with *Dr. Atkins' Diet Revolution* in 1972. In his revised 2001 book, *Dr. Atkins' New Diet Revolution*, he modified some of his ideas but remained faithful to the original concepts. The Atkins books have sold more than 45 million copies in the past 40 years (3).

During the late 1990s and early 2000s, low-carbohydrate diets became some of the most popular diets in the U.S., and versions of this diet (the Zone Diet, Protein Power Lifeplan, Go Lower Diet, and South Beach diet, among others) remain popular today. In most formats, the carbohydrate-modified (low-carbohydrate/high-protein) diet is a ketogenic diet, which induces a state of ketosis through severe limitation of dietary carbohydrates. Ketosis occurs in metabolism when the liver converts fat into fatty acids, and ketones (the byproduct of incomplete fat metabolism) reach high levels in the blood (4).

A compendium of research has examined the manipulation of macronutrient content to produce a "metabolic advantage" for weight loss. However, there is no consensus in the literature that low-carbohydrate diets produce significantly greater rates of weight loss or longer-term weight loss maintenance when compared with more conventional low-fat diets (5-7). Additionally, the American Heart Association warns people that the high protein and saturated fat content of the Atkins diet can be harmful to the heart.

If high-protein diets produce a greater amount of weight loss in some studies, what are the possible mechanisms? Scientists suggest that several mechanisms may be responsible for the weight loss seen with low-carbohydrate diets:

- The severe restriction of carbohydrate depletes glycogen (stored carbohydrate) supply, leading to excretion of bound water.
- The ketogenic nature of the diet may suppress appetite, leading to reduced caloric intake.
- The high protein content of low-carbohydrate diets may provide greater hormonally mediated satiety, thereby reducing spontaneous food intake.
- The self-selection from limited food choices may lead to a decrease in caloric intake.

In a review article of 107 published research studies designed to evaluate changes in weight among adults using low-carbohydrate diets in the outpatient setting, Bravata (8) found that weight loss while using low-carbohydrate diets was principally associated with decreased caloric intake and increased diet duration, but not with reduced carbohydrate content. In other words, the calorie reduction and negative energy balance that occurs on these diets induce weight loss. It is worth noting that many studies in this area are limited by a high attrition (drop-out rate) and by lack of adherence to the diet.

Where does this leave health and fitness professionals with regard to low-carbohydrate diets and questions from clients? The acceptable macronutrient distributions range (AMDR) is 45 to 65% of total calories from carbohydrates. According to science supporting the AMDR, anyone eating an adequate energy provision for weight loss from nutrient-dense foods, with 45% to 65% of total calories from carbohydrates, will fall inside of the recommendation.

That said, the emphasis of nutrition counseling today is to preserve (as much as possible) the way clients like to eat. Weight loss requires habit changes, but behaviorists who specialize in weight loss suggest that if client preferences can be preserved, they should be. In other words, if a client loves sweet potatoes, whole-grain bread, oatmeal, and legumes (all nutrient-dense carbohydrates), they may not be very compliant with

a program that provides only 45% of total calories from carbohydrates. They also do not need to be on a low-carbohydrate diet to lose weight, as any reduction in calorie intake below daily expenditure will induce weight loss.

Low-carbohydrate diets may work for some people, and as long as the diets are within the AMDR and provide nutrient-dense foods, they should not present a health risk. But they are not for everyone. Flexibility on behalf of the counselor and client is crucial to weight loss success (9, 10). In other words, the difficulty for most people lies not in the diet, per se, but in adherence to the diet. The closer the weight loss program is to the way clients like to eat, the more successful they are going to be. Alternatively, clients can choose to simply decrease the frequency of meals, portion sizes of the foods they normally consume, high-fat/energy-dense foods, or make any acceptable dietary changes to reduce caloric intake.

Carbohydrates, Weight Gain, and Insulin

Related to the high-protein/low-carbohydrate diet phenomenon is the discussion of insulin and weight gain, with the premise being that carbohydrates stimulate insulin release, and insulin stores fat. Therefore, eating carbohydrates makes you fat. Researchers are learning more every day about the role of insulin in obesity and disease development and progression. As often occurs, the popular media has twisted some of this research around so that insulin (along with carbohydrates) have become "bad words."

A definition of insulin and glucagon, and a brief discussion of their roles in the body, will help nullify some of the myths and clarify any dietary implications. Insulin is a hormone produced by special cells of the pancreas of healthy individuals in response to increased blood glucose concentration, among other things. The primary role of insulin is the transport of glucose from the bloodstream into the muscle and fat cells. Glucagon is the hormone that is secreted by special cells in the pancreas in response to low blood glucose concentration; it elicits release of glucose from liver glycogen stores (4).

To function optimally, the body must maintain blood glucose within a particular range — not too high or low — and insulin and glucagon help to accomplish this. The homeostasis of blood glucose is extremely important to life. If the range is not well controlled, as can be the case with diabetes, fluctuations to either extreme can be fatal.

Recent research on the glycemic index (GI), a method of classifying foods according to their potential to raise blood glucose, may help with weight control. Research on the GI shows that certain carbohydrates cause blood glucose to rise and fall (called "the area under the curve") more rapidly than others. For example, a matched amount of carbohydrate from white bread and barley will produce two different glycemic responses, or elevation of blood glucose. Researchers are studying how using the GI might influence appetite. Specifically, those foods that create a dramatic rise and fall of blood sugar (high-glycemic) may leave us feeling hungrier more quickly than those foods that are lower on the glycemic index (11-13).

Despite the possible benefits, the usefulness of the glycemic index is surrounded by controversy as researchers and practitioners debate whether selecting foods based on the GI really offers any weight control benefits. When tested, individual foods produce a wide variety in blood sugar responses, and foods affect blood sugar differently when they are combined with other foods. Critics of the GI question its practical utility because people do not eat foods in isolation the way these foods are tested in a lab. Ultimately, heeding the glycemic index may be nothing more than following current dietary recommendations because low-glycemic foods tend to be the minimally processed and high-fiber choices that are already endorsed by nutritionists and registered dietitians.

Where does that leave the health and fitness professional when faced with a question like "does insulin make me fat?" A simple explanation of the regulation of blood glucose and the hormones required may help educate the client. Additionally, health and fitness professionals should caution clients against

"demonizing" any one nutrient or category of nutrients. The body needs carbohydrates, fat, and protein to function optimally, and the focus should be on selecting the best choices from each group, not eliminating or severely limiting any single one.

"The More You Cut Calories, the More Weight You'll Lose"

Yes and no. An energy deficit must be created for weight loss to occur. However, health and fitness professionals should caution their clients against going too low. Most nutrition experts do not recommend an energy intake any lower than 1,000 to 1,200 calories, and even that may be too low for an active or heavier person.

Very low-calorie diets (VLCDs) should be followed only under the supervision of a medical professional. A VLCD is a medically supervised diet that uses specially prepared formulas to stimulate rapid weight loss for obese patients. Patients on a VLCD will consume these formulas, usually liquid shakes or bars, for several weeks or months in place of solid foods. These VLCD formulas contain optimal levels of vitamins and minerals to ensure obese patients are meeting their nutritional requirements. According to the National Institutes of Health, patients on a VLCD consume about 800 calories or fewer per day (14).

Do not confuse VLCD formulas with meal replacements sold in stores. Over-the-counter formulas, such as meal-replacement shakes found at grocery stores or health food stores, are not to be used for extended periods of time in place of solid foods. According to a recent meta-analysis performed by Heymsfield et al, there is a good amount of evidence supporting the use of meal replacements for weight loss and maintenance (15).

VLCDs that are properly monitored by a medical professional can produce significant short-term weight loss for obese patients. However, VLCDs should be part of an all-inclusive weight loss treatment program including nutrition counseling, behavioral therapy, exercise and physical activity, and overall lifestyle change. Additionally, long-term maintenance of weight lost with VLCDs is no better than other forms of obesity treatment. Incorporation of behavioral therapy and physical activity in VLCD treatment programs appear to improve weight loss maintenance (14).

Health and fitness professionals should provide guidelines for estimating daily calorie needs when counseling clients on the dangers of restricting calories below recommended levels. Some of the risks of following an overly restrictive diet include the following:

- Increased risk of malnutrition.
- Poor energy and inability to complete the essential fitness program.
- A behavioral "pendulum" swing — an inability to reintroduce "forbidden foods" in a moderate manner.
- Many patients on a VLCD for 4 to 16 weeks report minor side effects, such as fatigue, constipation, nausea, or diarrhea. The most common serious side effect is gallstone formation. People who are obese, especially women, are at a higher risk of getting gallstones, which are more common during rapid weight loss (14).

Health and fitness professionals should discourage overly restrictive programs advocating fewer than 1,000 to 1,200 calories per day, and support safe, maintainable weight loss by means of more healthful eating, smaller portions, and increased activity.

"Certain Foods (Grapefruit, Celery, Cabbage Soup) Can Burn Fat and Make You Lose Weight"

These programs, often called "negative-calorie diets," suggest that somehow certain foods create a negative energy balance. Although there is a metabolic cost of digesting, absorbing, and transporting nutrients (called the thermal effect of food — TEF), experts do not consider it significant to weight loss.

Negative-calorie diets are often very low calorie diets in disguise. They produce weight loss due to their severe energy restriction, not nutrient biochemistry. Additionally, most of these diets are limited to a small number of foods and do not provide adequate macro- or micronutrients.

"Low-Fat or Fat-Free Means 'Healthy' or 'No Calories'"

Although this misunderstanding was more dominant during the low-fat 1980s and early 1990s, the premise has again taken hold with the low-carb/no-carb craze. The two share the same fallacy that if a product is fat-free or low-carb, it is somehow healthy, calorie-reduced, or even calorie-free. The inverse is often true because fat-free and low-carb products often contain large amounts of added sugar, protein, and/or fat. Recall that any nutrient eaten in excess of the body's needs (thus resulting in a calorie surplus) will be converted and stored as fat. Clients should be encouraged to follow healthy eating guidelines rather than declare a single nutrient category to be diabolic in hopes of weight loss. However, if these foods help reduce total calorie intake, weight loss may occur if the total daily intake is less than calories expended.

Aiding clients through a body composition plateau is paramount to their long-term success. Half the battle when attempting to overcome a plateau is identifying the true underlying cause of it. Although plateaus occur for various reasons, they are all a result of calories in equaling calories burned. Although nutrition counseling for a medical diagnosis or disease should be strictly avoided by fitness professionals (and referred to a registered dietitian or other qualified medical provider), there is an enormous amount of nutrition education that is ideally suited to the partnership between the fitness professional and client.

"Skipping Meals is a Good Way to Lose Weight"

Skipping meals, or fasting altogether, is ultimately counterproductive and can adversely affect health. The body needs fuel to function well, and skipped meals or days of fasting do not support long-term weight loss. In fact, studies show that people who skip breakfast and eat fewer times during the day tend to be heavier than those who eat a healthy breakfast and eat four or five times a day. Hill and Wing (16) in their frequently sited and ongoing research project, The National Weight Control Registry, found only 4% of the 2,959 successful losers (those who have lost on average 32 kg and kept it off for 6 years) did not eat breakfast.

It is thought that people who skip meals tend to feel hungrier later on, and eat more than they normally would, and that eating regular meals and snacks throughout the day helps control appetite, making it less likely to overeat at any one meal due to extreme hunger and subsequent poor food choices.

"Eating at Night Causes Weight Gain"

There are both biological and behavior aspects to this myth. From a biological perspective, there is no magical specific time when the body is better or worse at storing fat. Bodies function on a continuum, and if an energy surplus prevails over time, weight gain will occur. However, if a person has not eaten all day and heads into the evening hours starving, he is very likely

Skipping meals may mean skipping exercise. Weight loss goals require a healthy combination of reduced calorie intake and exercise. Often, clients will skip meals and in turn participate in suboptimal workouts due to a lack of energy or fatigue. This can be dangerous because fatigue has been linked to increased risk of injury. Health and fitness professionals should remind clients that healthy eating will provide the right amount of fuel to optimize their workout — where they will burn some extra calories. It takes calories to burn them.

to consume more than needed. Likewise, if a person is mindlessly snacking all evening, there's a strong probability that excess calories will be consumed, and the calories that exceed expenditure will be stored as fat.

Studies show that the most difficult time of day for people to resist overeating is during the evening and nighttime hours (17). Resulting weight gain, however, occurs not because the foods were eaten at night, but due to overconsumption of calories beyond one's needs. Similarly, avoidance of nighttime eating often results in lower calorie intake, and thus, weight loss.

"Being Vegetarian is an Excellent Way to Lose Weight."

Although plant-derived diets can be exceptionally health-promoting and performance-enhancing, they will not on their own produce weight loss without maintaining a calorie deficit as previously discussed. Plant-based diets tend to be low in fat, and high in fiber and phytochemicals. However, different types of vegetarian plans, especially lacto-ovo (which includes dairy and eggs), can be very high in fat (for example, a quesadilla with refried beans and guacamole). Bottom line: If a vegetarian diet provides a calorie deficit, weight loss will occur.

"You Can't Lose Weight or be Healthy if You Eat Red Meat."

Eating lean red meat in small amounts can be part of a healthy weight loss plan. Red meat, pork, chicken, and fish contain some cholesterol and saturated fat (the least healthy kind of fat), but they also contain essential nutrients such as protein, iron, and zinc.

To incorporate meats into a weight loss diet, clients should be advised to choose cuts of meat that are lower in fat and to trim all visible fat. Lower-fat meats include pork tenderloin, 95% lean ground beef, arm pot roast, round steak, tenderloin, flank steak, or any portion that has less than 5 g of fat per serving.

It is equally important to educate clients about portion size. One serving of meat is approximately 3 oz cooked — about the size of a deck of cards. The amount of meat individuals choose to eat should be based on their total calorie allotment for weight loss.

"If You Exercise, You Can Eat Whatever You Want."

This myth is an extension of the "intake versus output" relationship of energy balance. It is true that the more you exercise, the greater the expenditure, which can positively affect the energy balance equation in favor of weight loss — but not if the input side remains higher than the output side. Some clients, when they begin an exercise program, believe the effort to be so significant that they think they can ignore the input side and still achieve weight loss. Experts recommend a combination of prudent eating with manageable exercise to produce lasting weight loss success. This discussion might also present an excellent opportunity for health and fitness professionals to discuss nutrient density and the effect of nutrient choices on exercise performance.

"More Protein Means More Muscle and More Fat Loss."

There remains so much mythological discussion around protein needs for hypertrophy that it deserves a brief explanation.

The body needs the correct amount of protein, carbohydrates, and fat to grow, maintain, and repair itself, including the growth of lean body mass. Amino acids, the component blocks of proteins, are used as building material for the body. Whether "building" a hormone, antibody, enzyme, or bicep muscle, the body relies on its reserve of amino acids to build proteins as needed. Resistance training, and to a certain extent all exercise, increases the body's need for repair material. Therefore, an active individual needs more protein than a sedentary individual. Although gym lore places recommendations as high as 2 g of protein

per pound of body weight, the scientifically based recommendations for strength athletes range from 0.5 to 0.8 g of protein per pound (1.2 to 1.7 g per kg) (18).

Why do body builders think they need massive amounts of protein? Perhaps this legend derives from the fact that many ferociously strong animals are carnivores, or perhaps it is as simple as the association between muscle and the material from which muscle is made. Regardless, the right amount of protein (and the obligatory resistance training) will support hypertrophy, and an excess of protein above total calorie needs will be used for energy or stored as body fat.

"Females Get 'Bulky' by Lifting Weights"

The advantages to resistance training are many, and they include calories expended during the activity, a modest effect on BMR, increased functional strength, greater muscle mass to enable cardiovascular training, and decreased risk of degenerative bone diseases. Why do so many women still shy away from this type of exercise, fearing that it will make them "bulky"?

Health and fitness professionals are in an excellent position to dispel this myth. History shows that despite similar percentage improvements in strength with resistance training, increases in muscle mass is less in women than men. This is likely due to the hormonal differences in men and women, specifically the 20—30 times higher level of testosterone in men, which exerts an anabolic effect (19).

It should be noted that the absolute change in muscle size may be larger in men than women because their total muscle mass is greater. In other words, questions remain about whether the percent enlargement of muscle in both sexes might be similar, but the absolute gains in men are greater because they start with a larger muscle mass. Regardless, the data suggests that women can use conventional resistance training and gain strength on a similar percentage basis to men without developing "bulky" muscles (19).

"You Have to Exercise at a Low Intensity, or You Won't Burn Fat."

Despite an enormous amount of research on the topic, there is still some confusion over the relationship of cardiorespiratory training intensity to fat expenditure. This fairly complex physiology has given way to one of the most common weight loss misconceptions: *You have to exercise at a low intensity, or you will not burn fat*. As with some of the other myths, there's a distorted grain of truth inside this one as well.

Physiology labs have sophisticated equipment to differentiate the fuels being used during exercise of different intensities. Fat contribution to total energy expenditure is related to intensity. However, it is not that simple. During exercise of low intensity, there is a higher percent contribution from fat as a fuel source (Table 9.1). However, this is offset by the higher energy expenditure during high-intensity exercise. Assigning some values to the concept will make this concept more understandable.

Although the percent contribution from fat is higher with the low-intensity exercise (60%) than in the high-intensity exercise (40%), the total caloric expenditure (as well as the contribution from fat calories) is greater in high-intensity exercise. Partly to blame is the cardiovascular equipment in fitness facilities that is erroneously labeled "fat-burning zone." High-intensity exercise of the same duration as low-intensity exercise results in more total calories and fat calories burned, making weight loss more likely.

Table 9.1 Calorie and Fat Expenditure

Type of exercise	Total calories expended*	Percent contribution from fat*	Total fat expended*
Low intensity	100	60%	60 fat kcal
High intensity	500	40%	200 fat kcal

* This is a fictional amount used as a demonstration

"Sugar Makes You Fat."

Sugar is a naturally occurring component of food, found in fruits, honey, and milk. Refined or added sugars originate from plant sources, such as corn, and are often added to processed foods. Both types of sugar contain the same number of calories (4 per gram). The cause of continuous weight gain in developed nations consists of a variety of environmental, psychological, and physiological factors, not sugar and sweeteners alone (20). Research has shown that obesity is positively linked with diets high in fat, calories, and time spent at a computer or watching TV (21). Sugars, particularly added sweeteners, are guilty by association because they are present in many foods and drinks individuals tend to overconsume.

Keep in mind that any food can cause weight gain if an individual is in a caloric surplus, regardless of sugar content. According to Popkin et al, "The use of caloric sweeteners has risen across the world, and has contributed to an increasing number of calories consumed per day, which leads to weight gain" (21). As a society, we make poor food choices, resulting in the overconsumption of sugar and the underconsumption of nutrient-dense foods. Consequently, individuals are consuming a greater number of calories. A greater number of calories consumed on a daily basis coupled with low physical activity is a recipe for weight gain. Health and fitness professionals' message to their clients should be "Reduce junk food intake (soda, cookies, chips, candy), and increase daily physical activity to improve health and promote weight loss." Their message should not be "Don't eat sugar; it will make you fat." For optimal health and body composition, added sugars should be limited to no more than 10% of total daily calories (22).

"Starvation Mode Prevents Weight Loss"

To help put this myth into perspective, consider that people around the world who truly suffer and die from starvation are not overweight. Although most studies have failed to show that dieting leads to a slowing metabolism, some research has shown a very slight downward adjustment when a person severely cuts calories, even after accounting for change in body composition and weight reduction (23-26). However, the small reduction is not a large enough compensation to prevent weight loss.

With that said, nutritionists and licensed health professionals discourage drastically reducing calories because it often leads to low energy levels, forcing a reduction in daily physical activity, mood swings, and possible malnutrition and micronutrient deficiencies. Severely restricted eating also leads to increased hunger, which may result in binge eating behavior that sabotages the individual's weight loss efforts. It is difficult to lose weight, and individuals failing to do so can easily misinterpret themselves as having a slow or damaged metabolism. The fact is that severely limiting calories will cause a person's metabolism to adjust slightly, but not enough to prevent fat loss. If a client is at a plateau, he or she is consuming and burning an equal number of calories. The solution is to move more and/or eat fewer calories to create an energy deficit, which forces weight loss to occur. If these strategies do not work, the client should seek the guidance of a medical professional to test for another underlying cause, such as hypothyroidism or Cushing's syndrome.

Summary

Health and fitness professionals are in an excellent position to "demystify" the world of nutrition and exercise for weight loss. By using academic resources and authoritative recommendations from credentialed sources, health and fitness professionals can educate their clients and empower them to make healthful behavior changes. This chapter addressed some of the most common myths heard in exercise environments, but tomorrow will bring new myths and fads. It is the responsibility of the health and fitness professional to read current research, investigate and dispel new falsehoods as they develop, and help "digest" the science for their clients.

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