

FOOD Insight™

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Calories Count: Balancing The Energy Equation

At last count, nearly two of three (64.5%) Americans were classified as overweight or obese. With this number climbing upward at an alarming rate, there has been much speculation as to the cause of America's weight problem. Some popular diet books are especially vocal about naming carbohydrates as the culprit. A few years back, the villain was dietary fat.

Somewhere along the line concern about calories took a back seat. That's too bad, because the fact is that you gain weight when you eat more calories than you burn. Period. "Obesity is a disease of excess — excess calories and excess sedentary activities," says registered dietitian Keith Ayoub, associate professor of pediatrics at the Albert Einstein College of Medicine in New York. "The cure is to balance calories in with calories out."

Likewise, weight loss doesn't depend on whether calories come from carbohydrates, protein or fat. To lose a pound, you must create a 3,500-calorie deficit by consuming fewer calories, burning more calories through physical activity, or a combination of both.

This formula is simple in theory, but difficult for many people to put into practice. Food intakes, activity behaviors and environmental factors

all play a significant role in tipping the balance toward weight gain. For instance, research shows that for a number of foods, portion sizes have increased along with the amounts Americans eat. Our enthusiasm for a labor-saving lifestyle contributes to the fact that only about one in four adults gets even the minimum recommended amount of daily physical activity.

Fortunately, the calorie equation can be balanced with increased attention to both food and physical activity habits. Experts offer this advice:

- Keep a record of food intake to raise eating awareness. "We're surrounded by tempting foods and often don't realize how much we're eating," says registered dietitian and American Council on Exercise-certified personal trainer Cathy Leman of Glen Ellyn, Illinois. "I ask my clients to keep a written log of what they eat and it's a real eye-opener. They're amazed when they see how many calories they're getting from seemingly innocent habits like nibbling food samples at the grocery store."
- Change food habits. Cutting calories does not mean a life sentence of food scales and measuring cups, as some people fear. Ayoub recommends that overweight patients

gradually start trimming food portions by, for instance, filling their plates a little less or skipping second helpings. "The weight starts to come off when people change their eating habits, not by weighing and measuring everything or counting every calorie," he says.



- Find the right macronutrient mix. Although a calorie deficit is necessary for weight loss, choosing the right proportions of carbohydrates, protein and fat in the diet can have a positive impact. "Many women I counsel take the 'low fat' message to extremes," says Leman. "They're hungry all the time because they don't eat enough protein and fat for satiety. By evening, they're ravenous and eating is out of control." For each client, Leman seeks the macronutrient balance that provides enough energy and satisfaction. The 2002 National Academy of Sciences' Food and Nutrition Board report, *Dietary Reference*

INSIDE	Food-Friendly Bugs Do The Body Good	2
	Risky Business	4
	NEWSBites	7

Food-Friendly Bugs Do The Body Good



Trillions of bacteria naturally occur in your gut, but don't be alarmed! Many of the bacteria are good and may help protect the body from certain diseases. A number of factors can upset the balance between the levels of good and bad bacteria. However, there is evidence that consuming foods that have "good" bacteria, called probiotics, and foods that aid the function of probiotics, called prebiotics, may help maintain a healthy balance of bacteria in the body and help improve certain disease conditions.

"Food-Friendly Bugs"

Our bodies have four lines of defense against infection: skin, mucosal lining, immune system, and gut microflora, sometimes referred to as gut microbiota. Research has shown that adding "friendly" bacteria to your diet will improve the health of your gut microflora, and may help protect both the lining of your intestinal tract and your immune system. An article written by Negendra Shah, associate professor of food science at the School of Life Sciences and Technology, Victoria University of Technology, Australia, in the November 2001 issue of *Food Technology*, highlights the common practice of adding probiotics, similar to bacteria already present in your body, to fermented foods such as yogurt. Probiotics are defined as live microbial food ingredients that have a

beneficial effect on human health, when ingested live and in sufficient numbers.

Knowledge of the health benefits of probiotics can be traced back many years when a Nobel Prize winning scientist and director of the Pasteur Institute, Elie Metchnikoff, hypothesized that Bulgarian peasants owed their health and longevity to the consumption of fermented milk products containing lactobacillus, a probiotic bacterium. By 1997, the use of probiotics was becoming well established in Europe, with fermented dairy products accounting for 65 percent of the European "functional food" market. According to an article by Catherine Stanton and colleagues in the *American Journal of Clinical Nutrition* in 2001, health-conscious Americans are realizing the potential health benefits of supplementing their diets with good bacteria and are the fastest growing segment of consumers of probiotic foods.

Different Types of Probiotics

The two most common bacteria added in the production of probiotic foods are lactobacilli and bifidobacteria. According to an article by Fooks and Gibson, published in a supplement of the *British Journal of Nutrition* in 2002, there are numerous species of lactobacilli and bifidobacteria; the main species thought to have probiotic characteristics are *L. casei*, *B. lactis*, *L. johnsonii*, *B. breve*, *L. bulgaricus*, *B. animalis*, *L. rhamnosus*, *B. infantis*, *L. reuteri*, *B. longum*, and *L. acidophilus*.

Today there are more than 70 lactic acid bacteria-containing products worldwide, including sour cream, buttermilk, yogurt, powdered milk, and frozen desserts. According to Shah, more than 53 different types of probiotic milk products are marketed

in Japan alone. In an article published in the *American Journal of Clinical Nutrition* in 2000, Belgian expert Marcel Roberfroid states that probiotics have traditionally been consumed as fermented dairy products such as yogurt but have also recently been incorporated into drinks, and in the future may be found in fermented vegetables and meats. They are also being marketed as dietary supplements in tablet, capsule, and freeze-dried preparations.

Health Effects of Probiotics

The health of the gut largely relies on the balance between good and bad bacteria, and probiotics may help the gut prevent an imbalance in which there are too many harmful bacteria. Most of the research on probiotics has been conducted through small clinical studies or epidemiological (observational) studies. This research has shown that probiotics may be promising as treatments for a number of diseases and conditions including: lactose intolerance, diarrhea secondary to antibiotic use or *E. coli* infections, other gastrointestinal infections, vaginal candida (yeast) infections, and lactose malabsorption due to chemotherapy. Research has reasonably well established that probiotics improve the body's ability to resist intestinal infection and improve digestion. Only limited evidence, however, suggests that probiotics have cholesterol-lowering benefits, reduce the risk of cancer, produce vitamins, and reduce the risk of urogenital infections other than candida. Although there is relatively little harm in taking probiotics, more research is necessary to establish a firm basis for using probiotics for specific health benefits.

(continued on page 3)

Food Friendly Bugs

Prebiotics, The Companion Nutrient

Gut microflora need an environment in which to thrive. Dennis T. Gordon, Ph.D., professor and chair of the department of cereal science at North Dakota State University, explains, “Fermentable dietary fiber is a source of prebiotics and the necessary energy source for our intestinal microbiota.” According to an article by Christopher Duggan of Children’s Hospital in Boston, Mass., published in the *American Journal of Clinical Nutrition* in 2002, inulin and oligofructose are the two most commonly studied prebiotics. Both inulin and oligofructose are found naturally in many fruits and vegetables as well as in whole-grain foods. They are also widely used commercially to add fiber to foods without adding bulk.

Health Effects of Prebiotics

Most of the research on the potential health benefits of prebiotics has been done in studies with animals or *in vitro* (in a test tube). Studies of inulin have shown that it may have a promising role to play in providing relief from constipation and suppressing diarrhea. Some studies also suggest a possible benefit for reduced risk of osteoporosis through increased calcium absorption, reduced risk of atherosclerosis through decreased cholesterol and triglycerides and improved insulin response, obesity and possibly type 2 diabetes (Roberfroid, *American Journal of Clinical Nutrition*, 2000).

The Lowdown on Consuming Probiotics and Prebiotics

Probiotics and prebiotics are safe to eat and have many positive health

Food Sources of Probiotics

- Yogurt
- Buttermilk
- Kefir
- Tempeh
- Miso
- Kim Chi
- Sauerkraut
- Other “fermented” foods

(source: www.cancer.med.umich.edu/news/pro09spr02.htm)

benefits. Eating a combination of pre- and probiotic foods, or symbiotic foods, those that contain both pre- and probiotics, may provide the most health benefits. Probiotic and prebiotic products are now widely available. Manufacturers formulate their products with different types and amounts of probiotic bacteria. Most work best when refrigerated or vacuum-packed to preserve the freshness of the bacteria.

Currently, there are no established recommended consumption levels of pre- and probiotics for beneficial effects. More research is needed to determine who will benefit most from consumption of those foods, and who should potentially avoid them. For example, as stated by Sanders in an article published in the November 1999 issue of *Food Technology*, immuno-compromised individuals (e.g., young, elderly, patients with AIDS, Crohn’s Disease or enteric infection, etc.) should check with their doctor before consuming probiotics and prebiotics. As always, it is important that individuals not self-diagnose any health condition and

speak to their healthcare professionals for advice on the nutritional component of any treatment plan.

The Future of Probiotics and Prebiotics

Pre- and probiotics are exciting areas of food and nutrition research, however, more studies are needed to substantiate some of the links between these nutrients and health.

Dr. Gordon sums up the current state of the science by saying, “Probiotics are helping us to not only understand but also improve intestinal health. Emerging research is also revealing an important supporting role for prebiotics.” The determination of specific strains of beneficial bacteria may help address various gastrointestinal diseases including Crohn’s disease and ulcerative colitis, irritable bowel syndrome, and infections in the stomach and small intestine. Research may also find ways for probiotics to improve tube feedings and infant formula as well as improve the nutritional health of the elderly.

Food Sources of Prebiotics

- Oatmeal
- Flax
- Barley
- Other whole grains
- Onions
- Greens (especially dandelion greens, but also spinach, collard greens, chard, kale, and mustard greens)
- Berries, bananas, and other fruit
- Legumes (lentils, kidney beans, chickpeas, navy beans, white beans, black beans, etc.)

(source: www.cancer.med.umich.edu/news/pro09spr02.htm)

Decision Making in Uncertain Times

Food Insight has focused recent articles on risk assessment, management, and communication as they relate to food. This article highlights how humans make decisions and references two experts who have “written the book” on the science of risk and its impact on our daily lives. David Ropeik, director of risk communication at Harvard University, and George Gray, acting director of the Harvard Center for Risk Analysis and lecturer on risk analysis, are co-authors of *RISK: A Practical Guide for Deciding What’s Really Safe and What’s Really Dangerous in the World Around You*. (Houghton Mifflin).

Consumers today may be more overwhelmed than ever before with information about risks to their livelihood — from terrorism, bioterrorism, and SARS, to food contamination and excess food consumption. It could be said that Americans may be more afraid now than they have ever been.

According to David Ropeik, decision-making about risk is decision making about survival, a fundamental genetic imperative. Organisms that could successfully recognize and respond to danger moved up the evolutionary ladder. Those that could not moved into the food chain. Our emphasis on caution is ancient, and certainly pre-dates the relatively recent development of the human cortex and our ability to make risk management decisions solely on the basis of the facts. We learned how to fear long before we developed our current ability to think and reason. Rational though we may presume ourselves to be, caution is rooted in the emotion centers of our brains.

Ropeik says, “The science of risk perception has confirmed that we respond to risk in emotional, intuitive, affective ways. Risk perception studies have also found patterns in the way that humans respond to risks. We tend to fear similar things for similar reasons. A few of the factors by which we judge risks, factors which, far more than a rational analysis of the facts, help us subconsciously ‘decide’ what to be afraid of and how afraid to be.”

We tend to be more afraid of new risks that are imposed on us without our control of the decision-making process, risks that arise from man-made processes, and from people or institutions that we don’t trust. Many times there is little connection between the perceived degree of risk and the actual danger. Unfortunately, frightened people

can make dangerous choices in their desire to feel safer. The challenge, according to Ropeik, is to understand and respect the legitimacy of our ancient affective responses to risk, but to do so in a way that is flexible enough to make room for the facts as well as our fears.

In their book, *RISK*, Ropeik and Gray provide a “risk meter” that gives consumers a sense of how big or small each risk might be, for the average American, although they note that the risk of an individual almost certainly varies from that average. In comparing these risks, one finds that food-borne illness is ranked as a high risk because of the strong likelihood of being exposed to a pathogen that can make one ill, whereas, food irradiation, ranked as a very low risk, can be part of the solution to pathogens and food-borne illness.

Other risks that the authors address in their book include air bags, the use of cellular telephones while driving, biological weapons, environmental hormones, solar radiation, mammography, and obesity. Surprisingly, the health risks from various hazardous agents and procedures, such as pesticides, water pollution, hazardous waste, mammograms, and nuclear radiation are lower than many people believe, whereas the health risks from alcohol, air pollution, solar radiation, accidents in the home, and medical errors are much higher than many people realize.

The goal of discussing risk management and decision-making is to help inform consumers about individual risks so they can make wiser choices for themselves about what, if anything, they want to do about those risks. The hope is that consumers will learn to put each risk into perspective against the range of risks about which the public is concerned.

The Food Guide Pyramid: Basic Maintenance for Your Body

A unique approach to communicate how the U.S. Department of Agriculture's *Food Guide Pyramid* can be used by everyone! This brochure provides nutrition messages and tips that support the *Food Guide Pyramid* and *Dietary Guidelines for Americans* in order to help individuals achieve a healthful lifestyle. To create greater consumer understanding, Pyramid servings are compared with foods and portions that typical individuals may consume in "real life." Features include: portion distortion, tips for "carrying out," a sample *Food Guide Pyramid*-friendly menu, and ways to be realistic, adventurous, flexible, and active as part of a healthy lifestyle. This brochure was focus group tested with general consumers and developed in partnership with the Food Marketing Institute and the U.S. Department of Agriculture.

To order a single, free copy, send a self-addressed, stamped envelope to *Food Guide Pyramid*, PO Box 65708, Washington, DC 20035, or access it on the Web at <http://ific.org/pdf/FoodGuidePyramid.pdf>.



Prevent Childhood Choking: It's Up to You

A new poster, developed in partnership with the National SAFE KIDS Campaign, provides guidelines and tips to help caregivers, parents, and others take the steps necessary to prevent the incidence of airway obstruction or choking in young children. Suitable for display in the home, a health care provider's office, or day-care center, the four-color poster is printed in English on one side and Spanish on the other.

To receive the poster, write to Choking Prevention Poster, International Food Information Council Foundation, 1100 Connecticut Ave, NW, Suite 430, Washington, DC 20036. Requests for multiple copies must be accompanied by a check made out to the International Food Information Council Foundation (single copies are free; additional copies are \$1.50 each).



Calories Count

Intakes for Energy, Carbohydrates, Fiber, Fat, Protein, and Amino Acids (Macronutrients) recommends a flexible approach in which adults obtain 45 to 65 percent of their total daily calories from carbohydrates, 20 to 35 percent from fat, and 10 to 35 percent from protein.

- Crank up calorie-burning physical activity. In addition to keeping a food log, Leman asks clients to keep a physical activity log. She

finds that people usually overestimate their amount of physical activity, but few actually get enough. When someone has been inactive, Leman recommends starting with just a few minutes of daily physical activity, such as walking, and building up from there. For more seasoned exercisers, she recommends increasing their frequency or intensity by 50 percent. "People clearly benefit in terms of calorie burning when they go from two days to three days of exercise each week, or increase their workout time from 30 minutes to 45 minutes."

100 Calories to Halt Weight Gain

Researchers theorize that the upward trend in the number of overweight Americans is caused, on average, by an imbalance of only 100 extra calories per day (1). Eliminating this 100-calorie imbalance by eating a bit less and getting a bit more physical activity each day may hold the line on weight gain for many people. This can be accomplished in an almost unlimited number of ways. Below are several ideas on how people can start to trim and burn about 100 calories a day.

Five ways to trim 100 calories from food

- Swap an 8-ounce regular soft drink for a diet soft drink.
- Drink 2 cups of fat-free milk instead of 2 cups of whole milk.
- Use 1 teaspoon of mustard or ketchup or 1 tablespoon of fat-free mayonnaise in place of 1 tablespoon of regular mayonnaise.
- Split a small bag of French fries with a friend.
- Slice a typical piece of apple pie about one-third smaller.

Five ways to burn 100 calories through physical activity

(PHYSICAL ACTIVITY AND WALKING ESTIMATES BASED ON A 150-POUND PERSON.)

- Pedal an exercise bike for 13 minutes.
- Practice some fast dance steps for 16 minutes.
- Work in the garden for 18 minutes.
- Walk briskly for 22 minutes (3.5 mph).
- Clean the house for 25 minutes.

Five food and foot power combos to cut 100 calories

- Eat five fewer potato chips and walk for 6 minutes.
- Eat one-quarter cup less of spaghetti with tomato sauce and walk for 11 minutes.
- Top toast with 2 teaspoons of apple butter instead of 2 teaspoons of butter and walk for 11 minutes.
- Spoon out 3 tablespoons less of mashed potatoes and walk for 13 minutes.
- Skip 2 half & half coffee creamers in coffee and walk for 15 minutes.

(1) Hill JO, et al. Obesity and the Environment: Where Do We Go From Here? *Science* 299:853-855.2003.

Calorie Myths and Facts

Have you heard the one about the fat-forming carbohydrate? Nutrition communicators continually face the challenge of dispelling common myths about calories and weight management such as the ones provided below:

Myth: Eating most of your calories in the evening promotes weight gain.

FACT: No matter when you eat them, you gain weight when you eat more calories than you burn off. However, mindless munching in front of the TV at night can push calorie intake over the top.

Myth: Fat free is calorie free.

FACT: Some people indulge in extra-large servings of fat-free foods, such as cookies, cakes and crackers, without realizing that these foods may contain the same amount or even more calories than regular versions. Get the facts on fat-free foods by checking food labels for the serving size and number of calories per serving.

Myth: Carbohydrates (or sugars) cause weight gain.

FACT: Carbohydrates do not cause weight gain unless they contribute to excess calorie intake. The same holds true for protein and fat. Findings from the National Weight Control Registry show that people who successfully maintain weight loss tend to eat diets that are higher in carbohydrates and lower in fat, in addition to watching their total calorie intake. However, some people who eat a diet that is extremely high in carbohydrates and low in protein and fat get hungry sooner, which may trigger overeating.

FDA's New Current Good Manufacturing Practices

On March 13, 2003, the U.S. Food and Drug Administration published a proposed rule to establish Current Good Manufacturing Practices (CGMP) in the manufacturing, packing, or holding of dietary supplement ingredients and dietary supplements. If finalized as proposed, CGMP will help to ensure that consumers have access to dietary supplements that are free from adulteration and that are accurately labeled. More information is available at <http://www.cfsan.fda.gov/~dms/supplmnt.html> under "Recent Announcements."

New Drug for Peanut Allergy

Hopeful news for those who suffer from peanut allergy was presented at the recent annual meeting of the American Academy of Allergy, Asthma, and Immunology (AAAAI).

A new drug called TNX-901, is a man-made antibody that can help stop the allergy process in individuals with peanut allergies. Although it does not cure the peanut allergy, allergic people who took the drug for a period of time before eating peanuts, in a clinical trial, did not get allergic symptoms from eating a small amount of peanut flour — the equivalent of about six to eight peanuts. Most accidental exposures are equivalent to eating one or two peanuts. The use of this drug, which would be taken on a regular basis, could provide greater protection to those peanut-sensitive individuals who could experience life-threatening reactions if they accidentally consume even small amounts of peanuts or peanut ingredients.

The results of this collaborative research were reported by Donald Y.M. Leung, MD, PhD, of National Jewish Medical and Research Center, Denver, and colleagues. In addition to the presentations at the AAAAI meeting, the research was published in the March 13, 2003 issue of *The New England Journal of Medicine*.

World Health Organization Report

On April 23, 2003, the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) released an independent report entitled *Diet, Nutrition and the Prevention of Chronic Diseases*. The report identifies new recommendations for governments on diet and physical activity that can be used to combat chronic conditions (i.e., cardiovascular diseases, diabetes, obesity, and various cancers) by decreasing the incidence of risk factors (i.e., hypertension, hypercholesterolemia, overweight, and sedentary lifestyles).

The report outlines approaches to altering nutritional intake while increasing energy expenditure. These include:

- Performing moderate-intensity physical activity for at least an hour per day;
- Increasing the dietary intake of fruits and vegetables; and
- Reducing the intake of sodium, as well as foods with elevated saturated fat and/or sugars levels.

As next steps, WHO is preparing the *Global Strategy on Diet, Physical Activity and Health*, while FAO is working to monitor diets, identify information needs, and explore the impact of the recommendations on policy and practice.

The independent report on diet and chronic disease can be downloaded at http://www.who.int/hpr/NPH/docs/who_fao_expert_report.pdf.

What's New at IFIC.ORG?

Do you need to know the definition of a specific food-related term? If so, go to ific.org/glossary and look it up. You'll find comprehensive definitions for almost 300 food-related terms at the click of your mouse.



New IFIC Foundation Publications

Below are the newest releases from the IFIC Foundation. Single copies of most publications are available free-of-charge. For a comprehensive listing of publications or for bulk prices, please request the IFIC Foundation Publications List below.

Publications List (MI-4010)

A complete list of publications and *Food Insight* reprints available from the IFIC Foundation.

Fish & Your Health (EB-2095)

This brochure takes a look at the benefits of fish and seafood in a healthful diet. Provides information on the impact of omega-3's and seafood consumption for the general consumer, children and issues on guidance for pregnant women. Favorably reviewed by the American Academy of Family Physicians Foundation.

Healthy Eating During Pregnancy (EB-2045)

This updated brochure brings readers the most recent scientific facts about nutrition during pregnancy, including appropriate weight gain, vitamin and mineral supplementation, and other issues of interest to health professionals and women. Developed in partnership with the March of Dimes.

Caffeine and Women's Health (EB-2040)

Revised and updated brochure providing current scientific facts about caffeine and women's health, including such topics as pregnancy and osteoporosis. This referenced document was developed in partnership with the Association of Women's Health, Obstetric and Neonatal Nurses.

IFIC Review: Understanding Food Allergy (IR-3070)

This referenced white paper offers the latest scientific information on food allergy. It provides an overview on how to distinguish a food allergy from other sensitivities to food.

Antioxidant Fact Sheet (MI-4250)

The first in a series of referenced materials on various food components and their potential health benefits, the Antioxidants Fact Sheet contains information on the health effects, research, references, and dietary sources of antioxidants; a "bottom line" section summarizes the research and current recommendations.

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