

## Is Thinner Always Better?

Despite new findings suggesting dangers to thinness, weight loss is still recommended for NIDDM subjects.

**A**ccording to conventional medical thinking, Jack Spratt probably had a long and healthy life, while his plump wife succumbed early on to diabetes, cardiovascular disease, gallstones, or one of many other obesity-related diseases. Yet, the surprising conclusion of several recent studies is that it was probably thin Jack who went to an early grave.

In the past, researchers often assumed that the relationship between weight and mortality was linear, with increasing weight carrying an increased risk of death. Yet, several still-controversial studies presented at a recent National Institutes of Health Technology Assessment Conference, "Methods for Voluntary Weight Loss and Control," suggest thinness, too, may increase the risk of mortality, even though it reduces the risk of many illnesses.

"It's hard to imagine that something will increase your illness rate and yet allow you to live longer," says Reubin Andres of the Gerontology Research Center at the National Institute on Aging in Baltimore. "Yet, during the adult years, for survival, it seems entirely appropriate to gain mild or moderate amounts of weight."

That conclusion poses significance for those treating non-insulin-dependent diabetes mellitus (NIDDM), for which weight loss is a cornerstone of both prevention and treatment. Researchers involved in the recent studies are unanimous in saying that obesity is clearly very harmful to people diagnosed with NIDDM. The new studies should

provide no excuse for overweight people with diabetes not to shed excess pounds.

But the findings do cast doubt on the wisdom of weight control in the young. "There are parents who are semi-starving their children to keep them extremely lean because of the family history [of NIDDM]. That, I think, needs to be questioned," says Andres.

For example, a study of ~2000 men and women in Rancho Bernard, California, examined the relationship between weight gain and the development of diabetes (1). The researchers found that neither childhood nor teenage obesity influenced the risk of developing NIDDM in the middle-age years. Rather, those who were thin before age 18 yr were significantly more likely to get NIDDM as adults than people who had been normal weight or overweight. The factor that appeared to increase the risk for diabetes was a large (>20%) weight gain after age 18 yr.

Troy Holbrook of the department of community and family medicine at the University of California at San Diego explains this surprising result by saying, "Gaining weight in the abdomen is more highly associated with diabetes risk, and when you gain weight in adulthood and middle age, that's where you tend to gain it."

Ironically, the new doubts about the wisdom of weight control come on the heels of the federal government's revised dietary guidelines, which have had the effect of promoting weight loss (2). Nonetheless, says C. Wayne Calloway of the George Washington University in Washington, DC, the new recommenda-

tions are appropriately targeted to people at risk.

Calloway, a member of the advisory committee that drafted the new guidelines, notes that the recommendations for weight loss have three components. First, people who have a medical condition like diabetes, whose symptoms are controlled by weight reduction, should lose weight. Second, because fat stored in the abdomen appears more dangerous than fat stored in the hips and thighs, people with a large waist-hip ratio should lose weight. Third, for all other people the guidelines recommend a range of appropriate weights that are lower than those in previous recommendations. In particular, the new table recommends lower weights for young people than for people >35 yr.

"One of the consequences of this three-part definition will be that more Americans will be identified as needing to lose weight than by the old weight table, but it will be a quite different set of Americans," says Calloway. "We will be better targeting who really needs to lose—men, younger adults, apple-shaped people, and people with other health problems."

Whether a public health policy that encourages weight loss will prove beneficial is the question at the heart of recent research. Most of the studies on obesity and life span were done in North America and Europe on middle-class white adults, usually middle-aged men. (These sampling biases also characterize studies that find a linear relationship between weight and mortality. The unit of comparison is usually the body mass index, or BMI. Calculated as weight in kilograms divided by the square of the height in meters, BMI allows the relative fatness of people of different heights to be compared.)

In studies that challenge the idea that thinner is better, the graphed relationship of weight and mortality often follows a J- or a U-shaped curve rather than a straight line, meaning that higher risks are found at low, as well as high

weights. For example, in a study of 34,000 adult members of the Kaiser Permanente Medical Care Program (3), thin cigarette smokers had higher rates of mortality for almost all causes of death—even accidents—than smokers of average weight. In another study, those in a group of 17,000 Harvard University undergraduates who gained the least weight after college had the highest death rates (4).

Such results are unconvincing to many researchers. "I've yet to see a study that is free of bias. . . that found a J-shape or a U-shape," says JoAnn Manson of Brigham and Women's Hospital and Harvard Medical School in Boston. She and her coworkers identified three serious methodological limitations common in studies of weight and mortality (5).

First, smokers tend to be considerably thinner than nonsmokers, yet many studies do not adequately control for smoking. Second, some studies inappropriately eliminate subjects who have diseases associated with obesity, causing obesity to seem more benign than it really is. Third, people with serious undiagnosed illnesses often lose weight before dying, yet many studies do not control for this cause of thinness. Although studies since 1987 have tried to control for these factors, Manson believes that most have failed.

One exception she cites is a study of mortality among 8800 Seventh-Day Adventist Men (6). Members of this Christian sect do not smoke or drink alcohol and tend to be lean and healthy. The researchers in this study found that the thinnest men did not have a higher mortality. In fact, for all age-groups and all types of death, the thinnest men had the lowest rates of death. The researchers concluded that their data showed no sign of a J-shaped curve for weight and mortality.

"This is one study in which we cannot argue with the control at the low tail of the body mass for height," says Claude Bouchard of the Physical Activity Sciences Laboratory at Laval University in Saint-Foy, Quebec. "I think now that all studies that have shown the J-shaped relationship are those in which [at] the low end of the BMI, it was not possible to separate the effects of the body mass versus those of other factors leading to leanness, particularly smoking, caffeine consumption, and preexisting disease."

Even some researchers who have found J-shaped curves do not believe that they can be accepted at face value. Millicent Higgins of the Epidemiology and Biometry Program at the National Heart, Lung, and Blood Institute and her colleagues looked at risk factors and mortality in men and women enrolled in the Framingham Heart Study. "Both ends of the [weight] distribution were associated with increased mortality," she says. "The interesting paradox is that people who lost weight tended to have favorable changes in major risk factors, including cholesterol concentrations and blood pressure." She thinks the higher mortality in the thinnest people may be caused by preexisting disease and by smokers who quit being likely to gain weight.

Defenders of the idea that excessive thinness may be harmful point out that a J- or U-shaped relationship between weight and mortality may not be unusual. For example, several studies have found that mortality goes up at very low levels of serum cholesterol. "Below a certain point, 140 mg/dl or so, you start seeing all-causes mortality going up," even though high cholesterol concentrations are associated with higher risks of heart disease. "Biology is not a linear thing," says Calloway. "Most biological

variables show some bell shape or U-shape to them."

But others are concerned that obesity researchers not be premature in telling the general public that moderate weight gain is normal and benign. However, Manson says, because obesity can cause so many diseases, "I think we need to be extremely cautious before we recommend to the public that they gain weight with age. . . We should be relying more on what we know from clinical studies and basic science studies about mechanisms of disease and the biological plausibility of the hypotheses."

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