

How To Live To 100

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Pick your parents well, exercise into old age and eat your veggies.

Marge H. Jetton is 104 and doing amazingly well. A retired nurse in Loma Linda, Calif., she still walks a mile every day through the halls of her retirement home and preaches healthy habits to anyone who will listen. She rides the exercise bicycle at a gym and lifts small weights six days a week.

A vegetarian for 50 years, she eats oatmeal and flaxseed for breakfast, green salad for lunch and soup and a vegetable sandwich for dinner. She has no diseases other than high blood pressure and "bad eyes," never snacks and proudly announces that she has never lost a tooth. "I have tried to take care of my body as well as I know how," she says. "I am sure it has helped."

Medical researchers are racing to unlock the secrets of longevity, trying to untangle the blend of genetics, good habits and just plain luck that enable some of us to live decades longer than average. They are studying Seventh-Day Adventists like Jetton, who have a life expectancy four to seven years longer than that of average Americans, probably because their faith preaches a vegetarian diet and exercise. They are examining the eating habits of oldsters in longevity hot spots like Okinawa, which has five times the U.S.' proportion of centenarians, and they're probing towns in Sardinia that have unusually many male Methuselahs.

There are about 50,000 centenarians in the U.S., or one per 6,000 people, and their numbers are increasing rapidly. Extrapolating from current death rates, 3% of today's girls will reach 100, and about 1.5% of boys, says Jay Olshansky, a biodemographer at the University of Illinois. Some optimists think the numbers could go far higher. If improvements in health continues apace, "a majority of children born since the year 2000 will celebrate their hundredth birthdays," contends James Vaupel, of the Max Planck Institute for Demographic Research, in Rostock, Germany. He predicts that life-span increases can continue indefinitely. (Olshansky says Vaupel has "no empirical evidence" to back such a view.) How can you live to 100?.

1. Pick your parents well.

Having good genes helps. Researchers estimate that 25% of variance in life span comes from genetics and the rest from environmental factors, including diet and exercise. But genes may be more determining in cases of extreme longevity. "For most of us, it is 80% environment and 20% genetics, but for centenarians it is probably 80% genes and 20% environment," says Nir Barzilai, director of the Institute for Aging Research at the Albert Einstein College of Medicine. He is one of several researchers studying the elderly in hopes of pinpointing longevity genes.

He has already found one protein present in higher than normal levels in his centenarians that may protect them against Alzheimer's disease and diabetes. He hopes to create a version of the protein that could be used to treat those afflictions. That is years off. In the meantime, the good news is that lifestyle has a huge impact.

2. Then live right.

Researchers at the University of Cambridge in England followed 20,000 middle-aged men and women in England for 11 years and found that nonsmokers with the healthiest eating and exercise habits at the outset had a 14-year-life-expectancy edge over the people with the worst habits. This followed a 2001 Loma Linda

University finding that Seventh-Day Adventists who kept good habits lived to an average age of 88, versus 78 for those who behaved less well.

Researchers at the Pacific Health Research Institute in Hawaii who followed 5,820 Japanese American men for 40 years found those who avoided risk factors such as obesity, heavy drinking, smoking and high blood pressure in middle age had a 69% chance of living to be 85, versus just 22% for men with six or more risk factors.

Results like these "tell me that on average most of us are doing things wrong," says Thomas Perls, a geriatrician at Boston University Medical Center who is studying 1,200 present and past centenarians in New England. He has found that people who make it to 100 tend to have staved off serious disability until well into their 90s, either by avoiding disease or by limiting its consequences. "With healthy behaviors, you are adding years to your life, and you compress the time with which you experience disability," Perls says. "Instead of the older you get, the sicker you get; it is the older you get, the healthier you've been." Olshansky adds, "The only control we have over the duration of our life is to shorten it, and we do that all the time."

3. Exercise—into old age.

Regular exercise is one of the strongest predictors of a long life. A 1998 Finnish study looked at 16,000 twins, both fraternal and identical, and found that those who exercised regularly had 44% the risk of death of their sedentary siblings over a 17-year follow-up period. "Exercise is roughly equivalent to an oil lube and a filter for a car. You don't have to do it, but when you do it makes the car run a lot better," says Olshansky. "It's the closest thing we have to a miracle cure." Regular exercisers generally live five to seven years longer than inactive people, according to a 2006 study of 5,000 Danes.

Researchers have been finding lately that the benefits of exercise continue well into old age. In one clever experiment scientists at the Buck Institute for Age Research in Novato, Calif., put 25 healthy older adults on a six-month weight-training regimen that increased their muscle strength by 50%. The researchers measured the activity of genes in the muscles before and after the training.

Before the training, hundreds of genes involved in energy metabolism had diminished from those of young adults. After training, many had been restored to their youthful levels. The researchers concluded last year in *Plos One*, a scientific journal, that the training partly reversed the aging process.

4. Avoid obesity.

Being obese in middle age roughly doubles mortality rates, depending on the study. (A note on mortality rates: This does not mean that overweight people's remaining life expectancy is only half; it just means they're twice as likely to die within a given period.)

The most severely obese in young adulthood lose eight to 13 years of life, a 2003 report in the *Journal of the American Medical Association* calculated. "There are no obese centenarians," Olshansky says, and he estimates that life expectancy in this country could decline in coming decades if Americans continue getting fatter and the diabetes epidemic widens. Obesity is linked to diabetes, heart disease and some forms of cancer. Whether being overweight but not obese will kill you is more controversial. (Obesity is defined as a body mass index above 30; to measure your BMI, multiply your weight in pounds by 703 and divide the result by the square of your height in inches.)

A 2005 study of 37,000 people by the Centers for Disease Control & Prevention caused a furor when it suggested that those who were overweight might be better off than those of normal weight. But a year later, two bigger studies in the *New England Journal of Medicine*, including one of 527,000 American patients, factored out the effects of smoking, which tends to keep the pounds off, and they found that even being moderately overweight (a BMI above 25) increases the death rate by 20% or so. The lowest death rates were

toward the upper end of normal weight. Very thin people have a higher risk of succumbing to respiratory diseases such as pneumonia, one of the studies found.

5. Don't smoke, drink (a little vino)

A lifetime of smoking subtracts an average of 10 years from your life, according to a British study that followed doctors for 50 years. If you quit by age 50, you gain six of those years back. Moderate drinking, by contrast, appears to be beneficial (particularly red wine, according to some research). Downing a daily cocktail or glass of wine may protect the heart by raising levels of good cholesterol slightly or by some other means.

A million-person analysis published in the *Archives of Internal Medicine* combined the results of 34 previous studies and found that light drinkers had up to an 18% lower death rate over the periods of the studies, typically 10 years, while heavy drinkers had a substantially higher risk of death. (Several kinds of cancer are linked to alcohol consumption.) The lowest mortality risk was found at four drinks a week.

6. Eat your veggies, hold the steak.

Researchers furiously debate the merits of low-fat versus low-carbohydrate diets. But there's no disagreement that diets high in fruits and vegetables are a good thing. They are consistently associated with longer life, in numerous epidemiological studies.

A 2005 study followed 75,000 older Europeans and rated them on a nine-point Mediterranean diet scale. One point each was given for high consumption of vegetables, fruits, beans, whole grains, fish and unsaturated fats; one point each for low meat and dairy consumption; one point for moderate alcohol use. Those who scored six or higher had a 17% lower risk of dying in the period looked at than those who scored a zero to three, after adjusting for differences in weight, exercise habits and smoking, according to a report in the *British Medical Journal*. An additional one-third pound of vegetables daily reduced the mortality rate by 6%, while eating 13 grams more of saturated fat daily (2 ounces of cheddar cheese, for example) boosted the death risk by 7%. Similar results have been found for Americans.

In California, Seventh-Day Adventists who are vegetarians live about a year and a half longer than those who eat meat, according to a 2001 study of 34,000 Adventists published in the *Archives of Internal Medicine*; those who also eat nuts frequently gain an additional two years of life expectancy, perhaps through cardiovascular benefits. The Adventist vegetarian diet "has many similarities to a Mediterranean diet; we are probably getting at the same dynamic," says the study's leader, Gary Fraser of Loma Linda University, which is an Adventist institution.

A 2009 study in *Archives of Internal Medicine* that followed 547,000 older Americans found those who ate the most red meat had a 31% to 36% higher risk of dying over 10 years.

Fruits and vegetables have another benefit beyond nutrients, points out Bradley Willcox, of the Pacific Health Research Institute: They are full of filling fiber and water, making overeating more difficult. In that longevity hotbed Okinawa, a popular saying is "Hara hachi bu"—eat only until you are four-fifths full. Older people there tend to eat up to 10 servings of fruits and vegetables a day, Willcox says. Sweet potatoes are their main starch, with half the caloric density of bread.