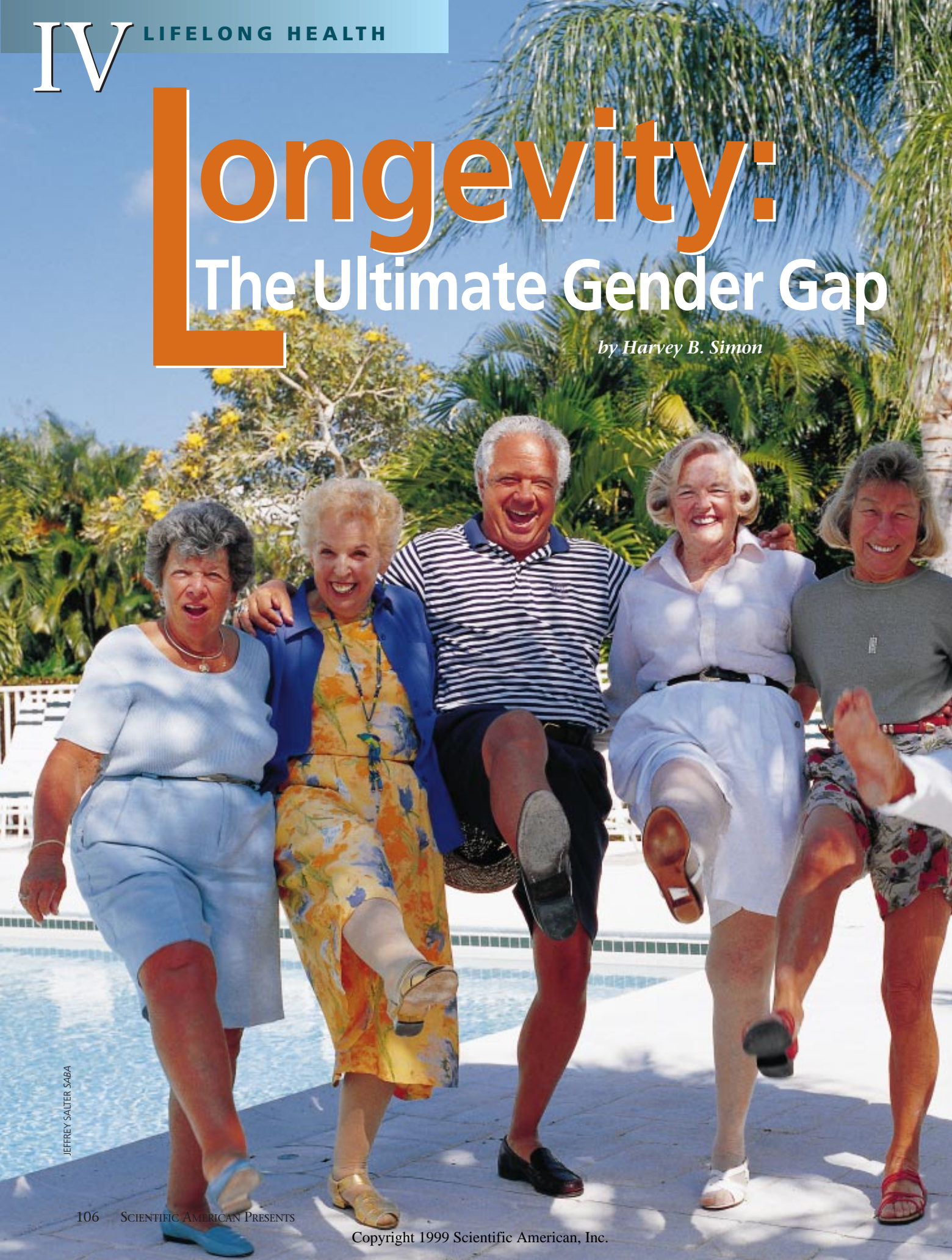


# Longevity: The Ultimate Gender Gap

*by Harvey B. Simon*



JEFFREY SAUTER SABA

*An American man's average life span is nearly six years shorter than a woman's. Differing hormone levels and lifestyle choices may help explain the disparity*



**ELDERLY MEN** are greatly outnumbered by elderly women in most retirement communities in the U.S. Women are about 40 percent more likely than men to live to the age of 65 and almost three times more likely to reach 85.

Why can't a woman be more like a man?" It's a humorous question asked by Professor Henry Higgins in a show-stopping song from the Broadway musical *My Fair Lady*. But Higgins would sing quite a different tune if the subject was longevity. When it comes to life span, Why can't a man be more like a woman? Women do indeed live longer than men. But why? And can men do anything to catch up?

Over the past half a century, life expectancy in the U.S. has risen slowly but steadily year after year. The main reasons for this trend are the dramatic advances in medical diagnosis and treatment as well as the changing American lifestyle, with its new emphasis on healthier diets and regular exercise and its declining dependence on tobacco. One thing, though, has not changed: the gender gap in life expectancy. People of both sexes are living longer, but the gains in women's life expectancies have outpaced those of men. In 1930 the average life span for American women was 61.6 years, and the average for men was 58.1 years; by 1997 the average female and male life spans had risen to 79.2 and 73.6 years, respectively. In other words, the gender gap is now 60 percent greater than it was 70 years ago [see chart on page 109].

It is an impressive difference, and it is responsible for the striking demographic characteristics of older Americans. Half of all women older than 65 are widows, and widows outnumber widowers three to one. At age 65, for every 100 American women, there are only 70 men. At age 85, the disparity is even greater: only 38 men for every 100 women. And the longevity gap persists even into very old age; even beyond age 85, the average woman will outlive the average man by 1.2 years. That is why female centenarians outnumber their male counterparts nine to one.

The gender gap is not unique to America. In fact, every country with reliable health statistics reports that women live longer than men; the observation is at least as old as health statistics themselves, because women outlived men by nearly three years when such data were first recorded in Europe more than 200 years ago. The longevity gap is present both in industrial societies (79 versus 73 years in western Europe and Australia) and in developing countries (54 versus 51 years in sub-Saharan

Africa). It is a universal phenomenon that suggests a basic biological difference between the aging processes in males and in females.

Doctors are not sure why women live longer, but it is likely that many factors contribute to the gender gap. Males differ from females from the very moment of conception. It's all in the genes: females have two X chromosomes, whereas males have one X and one Y. The Y chromosome begins the process of sexual differentiation in the second trimester of pregnancy, when the fetal testicles secrete the male hormone testosterone. The importance of fetal hormones in determining sex characteristics is obvious, but their role in influencing longevity is far from clear. Still, new research suggests that events during fetal life can affect health in adulthood. For example, studies have shown that a low weight at birth—often caused by poor nutrition during pregnancy—increases a man's risk of heart attack and stroke in adulthood. So it is conceivable that the levels of sex hormones at the very beginning of life also might influence events at the very end of life.

### Estrogen and Testosterone

Indeed, the longevity gap makes its first appearance in embryonic life itself. Sperm cells that contain a Y chromosome can outswim sperm bearing an X; as a result, 115 males are conceived for every 100 females. But for reasons that are not entirely understood, male embryos are more likely to miscarry than females, so boys outnumber girls by only 104 to 100 at the time of birth. The excess of male deaths continues in infancy and early childhood, but the difference is small until adolescence, when testosterone kicks in and boys start behaving like men. The results: motor vehicle accidents, homicides and other violent deaths that send the male death rate soaring to three times the female rate between ages 15 and 24. By age 25, females outnumber males, and the gender gap keeps widening with each subsequent decade of life.

The difference in estrogen and testosterone levels between men and women is the simplest way to account for the gender gap, although it does not fully explain the variance in life expectancies. During their reproductive years,



women are much less likely than men to suffer from heart disease. Estrogen makes the difference: the female hormone lowers LDL (“bad”) cholesterol and raises HDL (“good”) cholesterol. After menopause, estrogen levels plummet, LDL rises and HDL falls; it’s no wonder, then, that heart disease is the leading cause of death in older women as well as in older men. But women who take estrogen after menopause have about 50 percent fewer heart attacks. They benefit, too, from a similar decrease in strokes as well as a reduced risk of colon cancer and possibly Alzheimer’s disease. Even without postmenopausal hormone replacement, women have high estrogen levels for the three to four decades between puberty and menopause; that’s up to 40 years more than men, and it helps to explain the gender gap.

Estrogen protects women, enhancing their longevity by reducing the risk of heart attack and stroke. Although men have much less estrogen, they have much more testosterone. Produced by the Leydig cells in the testicles, testosterone rises to high levels during fetal

life, when it plays a crucial role in the development of the male genital organs. That work done, the hormone falls to low levels by one year of age; it remains low until puberty, when it surges up to the adult range. Testosterone levels remain steady until about age 40, when they begin to drift down. But it is a slow decline that averages only about 1 percent a year, and most men continue to produce sperm cells even when their testosterone levels drop well below their peak.

Testosterone makes the man: the hormone is responsible for the large muscles, strong bones, deep voices and receding hairlines that characterize the gender. It is essential for sperm production and fertility, and it has an important, if not completely understood, role in libido and potency. Testosterone also contributes to the aggressive behavior patterns that typically distinguish men from women. But can testosterone also make men ill? The very large doses of androgens (male hormones) that are used illicitly by some athletes certainly are hazardous, frequently causing aberrant behavior, liver tumors, sterility and

***“APPLE SHAPE” is a common manifestation of abdominal obesity in men. In contrast, obese women typically carry their weight on their hips and thighs, leading to the “pear shape.” Researchers believe that abdominal obesity is riskier than lower-body obesity.***

heart disease. Drug abuse is one thing, natural testosterone another—but new evidence suggests that even the normal levels of testosterone produced by a man’s body may increase his risk of suffering a life-shortening disease.

The prostate is an obvious example. In the prostate, testosterone is converted to dihydrotestosterone (DHT), the hormone that causes up to 80 percent of men to develop benign prostatic hyperplasia (BPH) as they advance in years. BPH is well named; it is a benign enlargement that does not usually shorten life, although it often lengthens one’s time in the bathroom. (The enlarged prostate squeezes the urethra, which slows the urine stream.) But DHT is also the hormone that drives prostate cancer, the disease that kills about 3 percent of American men [see “Combating Prostate Cancer,” on page 100].

Testosterone may also raise a man's risk of heart disease and stroke, the first and fourth leading killers of American men. Five mechanisms have been postulated: adverse effects on cholesterol metabolism, including a rise in LDL cholesterol and a fall in HDL cholesterol; accumulation of abdominal fat, which may lead to high triglyceride levels and insulin resistance; activation of the blood-clotting system and increased red blood cell mass; spasm of blood vessels; and direct effects on heart muscle cells, causing enlargement and possibly injury. Some of these effects can be produced with testosterone administration in experimental animals, and some have been observed in men who abuse androgens. But more study will be needed to find out if a man's normal testosterone can cause similar abnormalities in his cardiovascular system.

Men cannot change their chromosomes, and very few would change their hormones, even in quest of longevity. But men can catch up with women by refraining from some of the lifestyle choices that add to the gender gap.

### Smoking and Alcohol

Before 1960 smoking was far more prevalent among men than women. In 1955, for example, 56.9 percent of adult men were smokers, compared with only 28.4 percent of adult women. Since then, however, the smoking rates have converged: the prevalence among women peaked at 33.9 percent in 1965 and then slowly declined to 23.1 percent by 1994, but over the same period the prevalence among men plummeted to 28.2 percent.

If smoking is one of the causes of the longevity gap, why is the gap getting larger even as smoking rates have equalized? It is because smoking kills slowly. People who start smoking today will pay a steep price for their habit, but the payment won't come due for many years. Unfortunately, women are now suffering from a generation of tobacco abuse; as recently as 1960, lung cancer was rare in American women, but it is now their leading cancer killer, claiming 66,000 lives annually. In the 1990s, at least, smoking is one longevity factor that won't make men envy women. It is an area with plenty of room for improvement by both sexes.

Like smoking, alcoholism is traditionally a male problem that is increasingly shared by women. Small to modest amounts of alcohol protect a man's

health, reducing his risk of heart disease. But larger amounts shorten life, increasing the incidence of hypertension, stroke, liver disease, accidents and various cancers. Heavy drinking has certainly shortened the life spans of many American men.

### Diet and Health Care

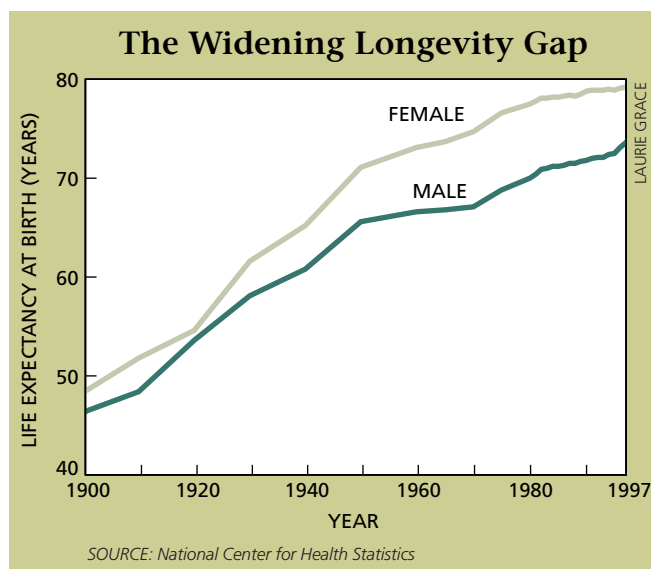
The differing diets of men and women may also help explain why women live longer. In most cases, women have a healthier diet than men, eating a greater proportion of vegetables and a lower proportion of meat. A 1997 survey conducted by the U.S. Department of Agriculture found that men consume an average of 96 grams of fat a day, which accounts for about 44 percent of their daily caloric intake. Women, in contrast, get just 32 percent of their calories from fat. In America, "real men" don't eat broccoli—but they should. The masculine ideal of meat and potatoes should give way to potatoes and vegetables, fruits, grains and fish. Diet really does make a difference.

In 1992 Finnish scientists shocked the cardiological world when they published a report linking high levels of iron with a greatly increased risk of coronary artery disease. Because women lose iron with each menstrual period, the research fueled speculation that lower iron levels in the blood might partially account for the protection against heart attacks that is enjoyed by premenopausal women. A 1997 Finnish study seemed to corroborate the findings when it reported that men who donate blood have a lower risk of heart disease than men who do not donate.

Does iron explain the male vulnerability to heart disease? Probably not. Five American studies have examined the question, and each failed to corroborate an association between iron and heart disease. More studies will be needed to resolve the conflicting data; at present, although there are many good reasons for a man to donate blood, longevity does not appear to be one of them.

A more significant factor contributing to longevity is that women take care of their own health better than

men do. Women are more diligent about checkups and preventive care. They are better at listening to their bodies and reporting discordant signals to their doctors. They even spend more time reading health publications. A walk down the health aisle of your local bookstore tells the tale: books on women's health greatly outnumber books on men's health, because publishers respond to consumer demand. It's true, too, of periodicals. *Scientific American Presents* published its issue on women's health a year before its issue on men's health. Harvard Medical School launched its *Women's Health Watch* in 1993, but the *Harvard Men's Health Watch* did not make its debut until 1996—and whereas at least three other health letters for women have been introduced by other publishers, *Harvard Men's Health Watch* remains the only one of its kind.



**LIFE SPANS of American men and women have been diverging for most of this century. The average life expectancy for women is now 5.6 years greater than the life expectancy for men.**

If you look around a primary care physician's waiting room on an average day, you might think you were in a gynecologist's office. That is because women visit doctors much more often than men; a 1998 survey conducted by CNN and *Men's Health* magazine found that 76 percent of the female respondents had been tested for health problems in the past year, compared with only 64 percent of the men. The disparity is particularly pronounced between the ages of 15 and 44. Even when men

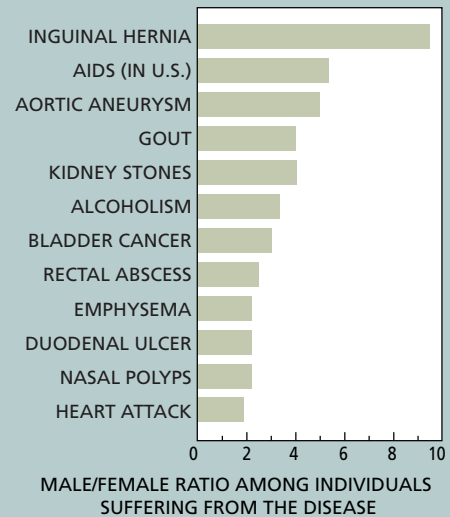
## Male and Female Illnesses

Men and women each have medical problems that are unique to their sex; only men get prostate disease or testicular cancer, and only women face the risk of childbirth and diseases of the

female reproductive organs. Although breast cancer is usually considered a female disease, men are not immune. In fact, about 1,400 American men are diagnosed with the disease every year—a small number compared with the 180,000 cases in American women but far from trivial.

Though not unique to either gender, other diseases have a marked predilection for men or women. For example, lupus and other autoimmune diseases that cause vascular inflammation are much more common in women than in men. But men have problems of their own; the accompanying tables list the diseases that disproportionately strike males (*right*) and the 10 leading causes of death for American men and women (*below*). —H.B.S.

### Illnesses That Strike More Men than Women



### Leading Causes of Death

|    | U.S. MEN                          | U.S. WOMEN                        |
|----|-----------------------------------|-----------------------------------|
| 1  | HEART DISEASE                     | HEART DISEASE                     |
| 2  | CANCER                            | CANCER                            |
| 3  | ACCIDENTS                         | STROKE                            |
| 4  | STROKE                            | CHRONIC OBSTRUCTIVE LUNG DISEASES |
| 5  | CHRONIC OBSTRUCTIVE LUNG DISEASES | PNEUMONIA AND INFLUENZA           |
| 6  | PNEUMONIA AND INFLUENZA           | ACCIDENTS                         |
| 7  | HIV INFECTION                     | DIABETES                          |
| 8  | SUICIDE                           | KIDNEY DISEASE                    |
| 9  | DIABETES                          | BLOOD INFECTIONS                  |
| 10 | HOMICIDE                          | ATHEROSCLEROSIS                   |

do visit their doctors, they tend to minimize symptoms, gloss over concerns and even disregard medical advice. It is hard to know why men make such poor patients; busy work schedules and competing responsibilities and interests may play a role, but the macho mentality appears to be the chief culprit. Who can blame men for wanting to be John Wayne? But by following the example of that quintessential American he-man, men fail to take the simple steps that can protect them from heart disease and lung cancer—the very same illnesses that struck down Wayne at the age of 72.

### Obesity and Stress

Another way that men can protect themselves from heart disease is through regular exercise. American men are slightly more likely to exercise than women, but about two thirds of men are not regularly active, and about

one quarter do not participate in any physical activity at all. Largely because of lack of exercise and poor diet, an astounding 59 percent of American men are overweight (defined as having a body mass index of more than 25). About half of American women are overweight, too, but there is a difference. Women tend to carry their weight on their hips and thighs (the “pear shape”), whereas men add it to their waistlines (the “apple shape”). Scientists do not know the reason for the difference, but it may have something to do with the fact that abdominal fat is more responsive to adrenaline, the hormone produced in response to stress. When adrenaline is secreted into the bloodstream, fat cells in the abdomen tend to release larger amounts of free fatty acids. The resulting burst of energy was quite useful for prehistoric men in “fight or flight” situations—which may be why the apple shape

evolved in men. But over time, free fatty acids can impair the normal functioning of the liver and increase the risk of diabetes, hypertension, heart attack and stroke. So abdominal obesity in men is much riskier than lower-body obesity in women. Aesthetics aside, most women are shaped better than men.

Stress itself may also be a factor that increases the chances of coronary disease. The stereotype of the hard-driving American male—succeeding at business but raising his blood pressure and clogging his coronary arteries in the process—contains more than a grain of truth. So-called Type A behavior—with its concomitant anxiety, stress and hostility—has been implicated as a heart disease risk factor, and this trait tends to be more prevalent in men than in women. Men who are feeling stress over their shorter life expectancy might be able to narrow the gap a bit by learning to relax.



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## How to Age Successfully

Every man," wrote Jonathan Swift, "desires to live long, but no man would be old." Faced with the ever present tick of the clock, can a healthy middle-aged man tell if he is likely to remain free of the disabling diseases that often tarnish the golden years?

To find out, scientists evaluated 6,505 men between the ages of 45 and 68 who were in good health when the study began in the mid-1960s. As part of the famed Honolulu Heart Program, researchers tracked the men for nearly three decades. Of the men who survived to reach ages between 71 and 95, 40 percent remained free of both physical and cognitive impairment. The best predictors of successful aging were low blood pressure, low blood sugar, abstinence from tobacco and not being obese. It's a short and simple list—and it presents a set of goals that most middle-aged men can achieve with measures as simple as a proper diet and regular exercise.

—H.B.S.

**PHYSICAL CHECKUPS** are anathema to many men. They visit doctors much less frequently than women do. And men often minimize their symptoms and disregard medical advice.

Blame it on genes and hormones or on societal expectations, but men are typically more aggressive than women. Even in primitive societies, males assume the risk of hunting while women take on the safer task of gathering. In industrial societies, too, men pursue more dangerous occupations and hobbies. Violent encounters between men pose the greatest danger of all; even discounting wars, violence and trauma kill far more men than women. Men younger than 25 years are eight times more likely than women to fall victim to homicide. Among young African-American men, homicide is the leading cause of death. Women, it's true, face the unique challenge of childbirth, but maternal mortality is low in the modern

world and does not begin to offset the male penchant for risk and violence.

What is more, men often fail to take advantage of social supports—the assistance provided by networks of friends and family members. The adage "people are good medicine" is true: support networks reduce the risks of many illnesses, ranging from the common cold to heart attacks. In some studies, at least, support groups even improve the outlook of cancer patients. In contrast, social isolation has been identified as a heart disease risk factor. Time and again, studies have shown that women are more aware of their own feelings—and the feelings of other women—than men are. Women are not really from Venus, any more than men are from Mars, but good interpersonal communication may help explain why women live longer on Earth.

Furthermore, in most human societies, women nearly always assume the responsibility of child-rearing. In some other species, though, males and females divide the chores more evenly. Could parental chores pay off in longevity? To find out, scientists at the Cali-

fornia Institute of Technology examined the life expectancy of male and female monkeys, apes and humans. They found that in the species where males and females assume similar responsibilities for raising their young, the males and females have similar life expectancies. In the species where males do not participate in child-rearing, however, the males do not live as long as the females. Of course, this does not necessarily mean that the act of parenting can add years to a man's life span; it is possible that the child-rearing males have greater longevity encoded in their genes because of natural selection. But young fathers might be wise not to dismiss it as monkey business when it's time to change a diaper or warm a bottle.

Why do women live longer than men? The explanation is complex, depending on both biological and behavioral differences between the sexes. In today's changing world, women seem to be acting more like men. When it comes to health, at least, it's a step in the wrong direction. With apologies to Professor Higgins, it's men who should be more like women.

## The Author

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## Further Reading

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Information on men's health and longevity is available at [http://www.harvardhealthpubs.org/Harvard\\_Search](http://www.harvardhealthpubs.org/Harvard_Search) on the World Wide Web.