

# Chapter 1

## The Fountain of Youth, at Your Fingertips

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### *In This Chapter*

- ▶ Understanding the current life expectancy
  - ▶ Uncovering proven methods to combat aging
  - ▶ Looking at the staggering numbers of preventable deaths
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Over the years, thousands of people have searched for the elusive Fountain of Youth, and although some have claimed to have found it, for most, it remains a hidden treasure. Great strides have been made in uncovering the secrets to aging healthfully and lengthening the lifespan, but there's still progress to be made. As much as you may wish otherwise, most people know there's no magic pill for good health and longevity. It takes commitment, work, and sometimes even denial of self — giving up poor eating habits, couch potato lifestyle, and the stressful schedules so many are addicted to — to stay healthy as you get older. You may be taking care of the externals but skipping over the basics of good health, which are also the basics of aging well.

You can't skip over the basics so easily, though. Balance is a big key in life, and healthy aging is no different. Skipping over essential healthcare is like ignoring routine maintenance on your car — the end result can be costly and dangerous.

Healthy aging is a current hot topic, and you can thank the baby boomer generation — the oldest of these people are now heading into their 60s — for today's emphasis on youthful, healthy aging. In this chapter, we discuss why people are living longer and better today than in previous generations, what impacted life expectancy a century ago, and what impacts our health and longevity today.

## Life Expectancy in the 21st Century

The last 100 years have seen a tremendous change in the way people live and the ailments they fall prey to. The epidemics of yesterday have been wiped out in industrialized countries, and life expectancy has increased. But even though folks are living longer today, this life expectancy brings a whole new set of problems and solutions.

Today, many folks take for granted that they'll live into adulthood, while in the past, people were well aware of the unpredictable threats on their lives. Some of the most damaging health threats in the world today can be modified by lifestyle choices. Making healthy choices is the basis of healthy aging and the recurrent theme of this book.

To examine why people live longer lives today, you must first look at why people *didn't* live as long more than a century ago. This section focuses on the differences.

### *That was then . . .*

Malnutrition, acute illnesses, infant mortality, and war were major contributors to shorter life expectancy 100 years ago. In the period of 1918 to 1919, the influenza virus (the flu) infected more than 400 million people worldwide and killed nearly 40 million. Today people still die from the flu, but not nearly at the mortality rates common in the past.

Poor living conditions and poor sanitation were also major causes of death. Each incident people experienced had a negative cumulative effect on their health. Even diseases that didn't result in death left people more likely to develop chronic illnesses when they grew older and lead to poor life expectancy.



The statistical probability of a person 100 years ago going through life unscathed was extremely low. Here are a few of the problems that caused widespread disease and mortality then:

- ✓ **Crowded and unsanitary living conditions:** These scenarios resulted in multiple outbreaks of malaria, cholera, dysentery, typhoid fever, yellow fever, and flu. Survivors often faced lifelong health consequences.
- ✓ **War:** War caused death directly and also exposed soldiers to foreign disease. During the American Civil War between 1861 and 1865 there were twice as many deaths from disease associated with the poor health than from battle wounds. More than 200 million people died in the beginning of the 20th century from a combination of combat and disease.

✓ **Viral and bacterial infections with no medical treatments or vaccines:**

Viruses and bacteria infections caused death in high numbers of both adults and children. Worldwide there have been many pandemics (affecting a large group, even the world) from the Spanish Flu in 1918 to the Asian Flu in 1957 that killed more than 50 million people. Polio, smallpox, diphtheria, and measles killed many adults and children before the advent of vaccines and still do in third world countries.

✓ **Hazardous work environments and hard physical labor:** Starting as young as age 13, exposed to dangerous fumes and bacteria, and with minimal protective equipment, people worked 10- to 12-hour shifts. The number of work-related deaths peaked around 1900 and then started to improve with the formation of unions and other safety requirements.

✓ **Lack of certain nutrients:** People from soldiers to sailors as well as malnutrition in the poverty stricken suffered from lack of nutrients. These deficiencies included

- **Pellagra:** A deficiency of niacin (b3) that may include symptoms of dermatitis, diarrhea, dementia, and death.
- **Goiter:** Goiter is caused by a lack of iodine in a child's diet that can lead to hyperthyroidism (elevated thyroid hormone). Complications include heart problems, impaired mental function, and birth defects.
- **Scurvy:** Lack of vitamin C led to scurvy, a condition where the body can't properly absorb iron, causing anemia.
- **Rickets:** This affliction was due to a lack of vitamin D, which is necessary for bone mineralization. Children with rickets had bones that didn't fully develop and were deformed, often with the classic bowing of the legs. Kids were also more susceptible to whooping cough and measles.

## ... *This is now*

There has been a change in the major health concerns today versus 100 years ago, but globally, some similarities still exist. Worldwide, infectious disease is still a major cause of death, and the threat of newer strains of viruses and bacteria are always present. In addition, the mutation of "superbugs" that are immune to many antibiotics has been created by overuse of antibiotics.



Major medical discoveries and inventions have improved the outcomes of many conditions by earlier diagnosis and better medications and treatments, but lifestyle changes have resulted in the current prevalence of chronic and often preventable diseases, such as heart disease, cancer, respiratory illness, diabetes, and stroke, which have the highest mortality rates today (see Chapter 2 for more info).

Over the years, medical advances have fueled the changes that have overcome some major health threats to society. Here is the list of major contributors:

- ✓ **Infant vaccinations:** Today, over 80 percent of children age three or younger receive vaccinations. As a result, some of the deadly diseases, like smallpox and polio, are completely controlled in developed countries, while worldwide programs try to spread this success into the underdeveloped countries. Furthermore, new vaccines are available (like for chicken pox) that weren't available 30 years ago. People born in 1955 were the first to receive vaccinations in infancy, starting with polio. That factor alone significantly increased that generation's lifespan. In the years to follow, more childhood vaccines were added, such as measles in 1963, mumps in 1967, and rubella in 1969.
- ✓ **Antibiotics:** People have been receiving antibiotics since the 1940s for bacterial infections, such as syphilis, tuberculosis, malaria, and pneumonia. Penicillin was discovered in 1928 and first used medically in 1940. After the discovery of penicillin, the rate of development of newer antibiotics was paralleled by fear of emerging resistant bacteria. In the 1950s, new resistant bacteria emphasized the need to limit use of antibiotics to keep new resistant bacteria from emerging. Today, the improper use of antibiotics is widespread, leaving researchers nervous about the inevitable development of newer resistant bugs. Follow your doctor's recommendation about taking antibiotics seriously to help avoid further resistant strains from improper antibiotic use.
- ✓ **Medical technology:** Medical technology drives the improvements in modern medicine. To make better medications, vaccines, and diagnostic tests, there needs to be advances in equipment to identify and create them. Diagnosing disease in its early stages, which improves outcome, comes from better diagnostic imaging. Patients with disease that has advanced to a point where organs are failing are given hope from technology advancements in prosthetics, organ transplantation, and tissue repair. Here are a few of the major breakthroughs:
  - The *artificial heart* can be used to keep heart failure patients alive until they can receive a donor heart.
  - *Computer-aided tomography (CAT) scan* produces three-dimensional images of the body that can show doctors whether a tumor is present and how deep it is in the body, to guide diagnosis and treatments.
  - *Magnetic resonance imaging (MRI)* is when magnetic fields and radio waves cause atoms to give off tiny radio signals, making it possible to detect cancer and other ailments early.



Despite these amazing advances, some diseases are still constant — cardiovascular disease (CVD) is still the leading cause of death in the world, and although cancer, respiratory illness, and diabetes all trail behind, they're still major health threats (see Chapter 2 for more info on cancer and CVD).

## The Basics of Pro-Aging: The Best Actions You Can Take

You can't prevent the passage of time, but when you're *proactive* about your life choices, you can control some of the risk factors in your life associated with illness and disease. Being proactive doesn't automatically guarantee you won't develop a chronic disease or illness, but not doing anything or actively taking part in known risk factors that are linked to chronic disease or illness may lead to health problems.

You may not realize just how much control you have over how long you live — and we don't necessarily mean that in a good way. Seemingly casual choices you make every day may have the most profound impact on your health. In fact, it's estimated that if everyone in the United States led a healthy lifestyle (outlined in the list below), more than 50 percent of the cases of cardiovascular disease and diabetes could be avoided, and more than 50 percent of all cases of cancer prevented.

The earlier in life you choose to follow a lifestyle of disease prevention, the more you can lower your risks of developing chronic disease. Chronic disease and illness come from many different factors, some of which you can control — such as lifestyle choices — and others you can't — like your age and genetics.



The following tips show you how to avoid the most damaging and preventable threats to your health and aging:

✓ **Don't smoke — and if you already do, stop.** Really. Smoking increases the risks for the top three killers: heart disease, cancer, and cardiovascular ailments, including strokes. It also damages your lungs and other parts of your respiratory system. At least 60 chemicals in cigarette smoke cause cancer, and as a cigarette burns, it produces the poisons carbon monoxide, ammonia, formaldehyde, arsenic, and cyanide.

Smoking raises your blood pressure and decreases the flow of oxygen to your brain and body. It's also a significant risk factor for other health concerns, including emphysema, chronic bronchitis, stroke, and osteoporosis. (See Chapter 2 for more info on smoking; Chapter 6 for osteoporosis.) In the year 2006, smoking resulted in 435,000 deaths or 18.1 percent of the total deaths (includes 35,000 deaths from second-hand smoke and 1,000 infant deaths due to maternal smoking).

✓ **Limit alcohol consumption.** If you drink alcohol, no more than two drinks a day are safe for men, and one or fewer drinks a day for women. (A standard drink is one 12-ounce bottle of beer or wine cooler, one 5-ounce glass of wine, or 1.5 ounces of 80-proof distilled spirits.) Women are more likely to have liver damage from drinking two or more drinks a day than men are, so it's especially important for women to keep alcohol consumption to one or fewer drinks a day.

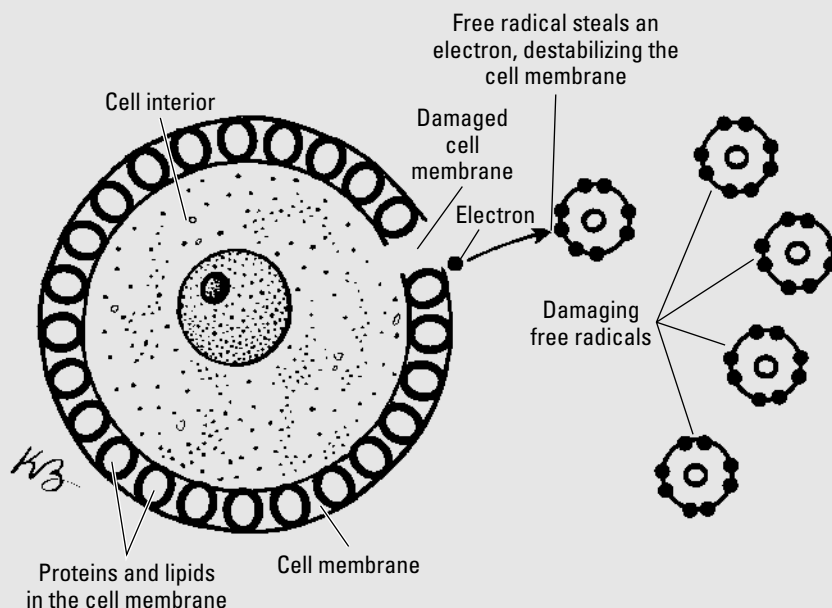
## The high cost of free radicals

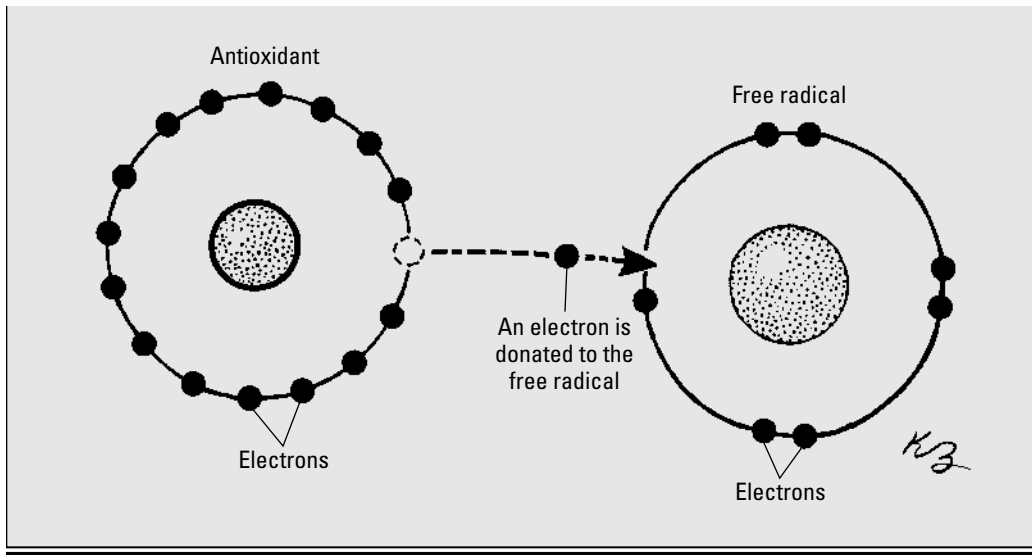
Free radicals can come from internal reactions or can be caused by external sources such as exposure to X-rays, cigarette smoking, air pollutants, pesticides, and other industrial chemicals. To understand free radicals, it helps to understand cell structure.

The human body is made up of cells. Cells are made up of molecules. Molecules consist of elements (water, calcium, iron), and elements are composed of atoms (made of a nucleus, neutrons, protons, and electrons). Atoms are bound by a chemical bond created by pairs of electrons that surround the atom. The number of protons (positive charge) in the atom's nucleus (center) determines the number of electrons (negative charge) that surround the atom. Electrons by nature are unstable and have a tendency to break away from the atom, leaving it with an unpaired electron. This

unpaired electron turns the atom into a free radical, which becomes a scavenger looking for an available electron to stabilize itself. Free radicals steal electrons from other atoms, making these atoms, with missing electrons, become free radicals, and this sets off an ugly chain reaction (see the following figure). With time, free radicals cause damage to the cell structure and the cells die. Tissue that's continuously assaulted by free radicals leads to cell death, which leads to more rapid aging. Free radicals are known to be linked to cancer, heart disease, arthritis, and other disease.

Antioxidants work by targeting free radicals and donating one of their electrons to each free radical (a process called oxidation), neutralizing it, and preventing damage to the body's tissues (see the following figure).





Alcohol is a depressant and can exacerbate the symptoms of depression and other mental disturbances. Alcohol intoxication causes problems with coordination, speech, and decision making, leading to risky behaviors. At toxic levels of alcohol intake, vomiting, difficult breathing, seizures, and even death can occur. Alcohol has an addiction potential, with around 8 percent of adults having an alcohol use disorder. With addiction and chronic alcohol consumption, disease in the liver, pancreas, nervous system, and gastrointestinal system can occur. If you've had any history of addiction to alcohol or any other substance, you shouldn't drink at all.

Many studies have found that consumption of alcohol at these quantities can have protective measures in cardiovascular disease. Consumption of red wine may be particularly favorable, since red wine contains certain polyphenol antioxidants associated with cardiovascular health.



If you're pregnant, you should avoid alcohol altogether because researchers don't know how much alcohol will harm a fetus, but they do know that a certain amount can be extremely harmful.

- ✓ **Maintain a healthy, balanced diet.** We can't overstate the importance of a balanced and healthy diet as you age. A poor diet can lead to an increased risk of many health problems, including osteoporosis, heart disease, and impaired memory. Eating well, on the other hand, makes you feel and look better, keeps your body functioning optimally, wards off colds and sickness, and contributes to lowering blood pressure and cholesterol levels, which in turn helps protect you against heart disease and stroke. (Chapter 7 tells more about good nutrition.)



- ✓ **Exercise regularly.** Over time, a sedentary lifestyle can lead to obesity, a preventable yet dangerous epidemic that poses a threat to people's longevity. And it's on the rise. As you age, regular exercise should be a cornerstone of healthy living. As your body slows down, you may be tempted to skip the exercise because it's harder to do, you feel challenged physically, or you accept that being less active is part of normal aging. Don't fall prey to this thinking!

As you get older, exercise doesn't need to be strenuous, it just needs to be consistent. Regular physical activity helps your body function more effectively. (See Chapters 9 and 10 for more info on activity and exercise.)

- ✓ **Manage your stress and develop healthy coping mechanisms.** Stress causes the release of the hormones cortisol, norepinephrine, and epinephrine, which under acute stress have a protective effect on the body. But *chronic* stress allows hormones to hang around longer than usual and cause the formation of free radicals. (See Chapter 13 for more information on the effects of stress.) Although these little buggers don't cause death directly, they do contribute to aging. Check out the nearby sidebar, "The high cost of free radicals."
- ✓ **Get enough sleep regularly.** You need sleep, both psychologically and physiologically. The body uses this time for healing and growth, and your body produces many hormones essential for proper functioning during the deepest sleep stages. Sleep irregularity can have a direct impact on some disorders, such as epilepsy and migraines, and has been associated with diseases, such as cardiovascular disease, clinical depression, diabetes, and other serious conditions. (See Chapter 14 for more on sleep.)
- ✓ **Visit your doctor for the recommended screening tests for your age.** Several important tests can help protect against cancer, heart disease, stroke, diabetes, and osteoporosis. Some of these tests find diseases early, when they're most treatable, while others can actually help keep a disease from developing in the first place. (See Chapter 2 to find out which tests you should have and when.)

## *If Staying Young and Healthy Is So Easy, Why Isn't Everyone Doing It?*

There's nothing terribly complicated about living a healthy, life-prolonging lifestyle. So why are more people falling prey to partially preventable diseases every year? In this section, we explore what we think are the biggest reasons behind the staggering numbers of preventable death. Take these pointers to heart, so you can recognize any that may be present in your own life and make the modifications to effectively enhance the quality of your life, both now and in the future, no matter what your age.

## Short-sighted thinking

We're going to let you in on a little secret, everyone is mortal. Despite this being common knowledge, few people think about the inevitability of their own death and the things they can do to prevent it from happening prematurely. If they did, there would be far fewer accidents of every type, no one would ever break their hip falling off a ladder they shouldn't have been on in the first place, and cigarette sales would plummet.

The idea that death can be postponed leads to thinking that "tomorrow" is a good time to start a dietary overhaul, an ambitious new exercise regimen, and, of course, tomorrow is the best time to quit smoking and drinking. For many people, tomorrow is also a good time to finally call and set up the routine physical or breast exam they've been avoiding for the past five years.

We're not advocating that you get out the sackcloth and ashes and carry a sign that states "The End is Near," but a little realism can go a long way toward a new way of living that can literally save lives — at least for a few more years.



How can you inject enough realism to make you want to change but not so much that you feel it's all too futile anyway? The following ideas may help:

- ✓ **Take a quiz.** There are online sites that allow you to input your health information and get a prediction of how long you'll live. Seeing your projected timeline in black and white may be enough to get you motivated to make changes. One such site is [www.livingto100.com](http://www.livingto100.com).
- ✓ **Pay attention to how you feel.** Often the little nagging symptoms that can signal something big brewing are ignored. One way to keep track of what's going on with your health is to keep a journal. Don't do this if you're already obsessed with your health — most likely you already keep track of your symptoms. Do this only if you're the type of person that ignores warning signs like shortness of breath, chest pain, or headaches. You may see a pattern that needs to be addressed.
- ✓ **See your doctor.** Make it clear when you make the appointment that this isn't a "sick" visit but rather a consultation, so more time is allotted. Ask him what you can do to improve your health, and then *do it*.



Many people have joined a "managed care" system where there are limitations on treatments and a focus on cutting costs, often leaving individuals managing their own care. The plethora of health information on the Internet (not all accurate, but abundant) leads people to self-diagnosing or making their own clinical decisions based on information they find on the Internet. It's not bad to be informed, but it can be dangerous if this information is replacing doctor visits.

## *Confusing what feels good with what is good*

Making healthy food choices can have a major impact on health and aging. Most people know some of the fundamental eating habits that should be avoided such as eating fried foods and high sugar content snacks. Those same people also know that fruits and vegetables are good for you. Then why are so many people unable to make the decision to eat the way they know they should?



Could it be that some people's inability to stop eating poorly is an addiction, similar to addictions to tobacco and alcohol? More likely, it's the cavalier attitude many people have about their health that keeps them eating poorly, until they're slapped in the face with the reality of poor health. You may have heard the saying "cancer is the cure for smoking." Well, you would think diabetes and heart disease would be the cure for obesity . . . but sadly, they often aren't. This battle is never ending in the medical profession. Moving to healthy eating habits is difficult. Eating what's good for you just doesn't feel as good as eating what's bad for you, in many cases. It's not that you can't ever eat a fast food meal again — you can. You can't, however, eat fast food or packaged food all or even most of the time and stay healthy.

## *The desire for a quick (and easy) fix*

Given a choice, most people will take the quick fix over hard work every time. Lose 25 pounds in a week, guaranteed? Sign me up! Quit smoking overnight? Here's my money! Build a beautiful body in only two minutes a day — and you don't even have to stand up? That's for me!

It's human nature to want something for nothing, but when it comes to living longer, you have to put in the time and effort — hours in the gym, self-control in the grocery store, and discipline in your lifestyle choices. And make no mistake, it takes time and effort to eat healthier foods, exercise, and maintain a focused, balanced low-stress lifestyle. You have to give up things — horribly unhealthy foods that taste so wonderful as well as time you feel short on anyway — to get yourself in a positive aging routine.

Some of the more recent "quick fix" ideas have involved getting hormone supplements to stay young. Here's the real story on some of the most often touted anti-aging hormones:

- ✓ **Human growth hormones (HGH):** These are produced by your pituitary gland and are required for growth and cell repair. They start dropping at around age 40, and by age 70, HGH production may have dropped as much as 75 percent. So, HGH supplementation sounds like the perfect way to reverse the effects of aging. But does it work?

Some studies have shown an increase in muscle mass and decrease in body fat in patients with a documented deficiency who received injections several times a week. The studies didn't, however, demonstrate an increase in strength along with the increase in muscle mass in those that didn't have a deficiency in the hormone. Evidence supports that HGH use in those who have a deficiency does offer benefits, but doesn't appear to be the simple answer for those without deficiency but are looking for a short cut.

- ✓ **Dehydroepiandrosterone (DHEA):** DHEA is a hormone produced by the adrenal glands and is converted into the hormones estrogen and testosterone. Levels of DHEA drop as you get older, and it's been theorized that raising DHEA levels may increase muscle mass and bone density, boost the immune system, and delay aging symptoms, such as joint pain, decreased muscle, libido, and lower energy.

However, a study of 144 people over age 60 conducted by the Mayo Clinic over a two year period showed no increase in muscle strength, bone mass, endurance, or quality of life. An earlier, smaller, and shorter study did show some reduction in body fat and insulin resistance in those taking DHEA. Based on the evidence, use of DHEA without diagnosed deficiency doesn't seem to offer much benefit. As with other hormones, DHEA can help those who have a deficiency.

- ✓ **Testosterone therapy:** Like many hormones, testosterone production starts to decrease around age 30. Low testosterone levels can cause impotence in men and decreased sex drive, bone loss, muscle loss, and low energy levels in both men and women.
  - **Men:** In men with low testosterone, supplementation can increase all the above, so the interest in testosterone as a way to keep older men "young" developed. However, using testosterone supplements if you have normal testosterone levels already can be risky; very high levels of testosterone have been linked to breast cancer in men and can cause prostate enlargement, which can accelerate already present prostate cancer.
  - **Women:** Women with low testosterone can have improvements in weight management and libido, but they may also develop male characteristic side effects such as increased facial hair and deepened voice. These won't occur if you're truly deficient and monitored correctly.



While hormone supplementation can be valuable, it's only valuable if you have a hormone deficiency. If you're having symptoms of fatigue, erectile dysfunction, inability to lose weight, muscle wasting despite exercise, or decreased libido, supplementation with hormones may help, but you need to discuss testing with your doctor instead of grabbing a bottle off the health store shelf. People who don't have a deficiency and are using it as a short cut to improve strength, endurance, and energy may have adverse reactions. Also, athletes have been using this for enhancement without a true deficiency or understanding of what the long-term consequences are.

## *Modifying Your Lifestyle: The One True Source of Hope*

Wading through the mire of information, articles, products, and research on aging is enough to leave you feeling conflicted and confused. Medicine is starting to center on the behavioral modification that effectively helps people practice healthy lifestyles. So familiarize yourself with the truth — which we provide for you in the pages of this book — and resolve to let it guide your decisions.



In the end, living a healthier lifestyle is nine-tenths attitude change and one-tenth real effort. If you change your attitude about food, eating healthy will no longer seem like a punishment. Changing your exercise attitude makes exercise a pleasure rather than a pain. Getting rest is the energy for tomorrow. This type of attitude pushes you forward through the rest of this book and educates you further about the dangers and rewards of better lifestyles and healthier aging. And we're happy to take the first leg of your journey to healthful living and aging with you.