PART ONE

The Power of Movement

1

A Little Activity Goes a Long Way

Sedentary: From the Latin word *sedentarius*, meaning "sitting, remaining in one place." Pertaining to animals who move about little or who, like a barnacle, are permanently attached to something.

Everybody has excuses for not exercising, and Tina was no exception, although, as a hospital food and nutrition director, she should have known better. It was her job to teach people how to eat better and live healthier.

Nevertheless, she had let herself go. She had a membership at a gym, and a treadmill and two stationary bikes at home. But while she was working and raising four kids, the struggles and challenges of life overcame her good intentions.

"I got tired just thinking of going to the gym after a busy eight- or ten-hour day, working out for forty minutes, and then coming home to cook dinner. And so from about age forty-five to sixty, I didn't take good care of myself," she said. "Instead of using the treadmill, I would hang my clothes on it. Instead of following the diet I preached to others, I ate much more rich food than I should have. And, I have to confess, as my kids got older and I didn't have to jump up and down during meals to get this and that for them, I enjoyed what I was eating more than ever."

As others often do when they reach a milestone in life, Tina did a reality check at age sixty and realized that her energy had been sputtering for about five years. Her weight had ballooned from 135 to 170 pounds.

She had chronic lower back pain and a touch of arthritis in her knees for which she took pain medication on and off.

For her sixtieth birthday, her children gave her a party and took lots of pictures. When she saw herself in the photos, Tina was appalled.

"You are fat, lady," she said to herself. "You are gross. You go around telling diabetic and cardiac patients what to do, but look at you. You don't practice what you preach."

Tina said the pictures jump-started her quest to improve her health. She began looking for a program that could help her reach her goal and found one that inspired her: a program that teaches adults how to convert daily routines into exercise.

"I took to the concept immediately," Tina said. "There was no gym. No sweating. No need for a workout."

She started off with something utterly simple and nonchallenging: the 2-minute walk.

"I'd be sitting at my desk for a while and realize I needed to get up and do something," she said. "So I would get up and walk for two minutes in the hallways. I did that ten times a day. That's twenty minutes. Later I might do five minutes five times a day, or ten minutes three times a day. It all depended on my day. But that's how I got back into better condition. That's how physical activity became doable for me."

Tina said she soon started considering every activity in her day a potential source of exercise.

"Vacuuming the house became a ten-minute exercise, and fifteen if I did the steps in the house as well. Walking the stairs at the hospital instead of taking the elevator became a routine. And parking my car as far away from my destination as was practical.

"I'm a TV addict. But now instead of watching commercials I walk the commercials. I can walk around the house seventeen times at a moderate speed during a typical commercial break. If the weather is good, I go out the front door, walk around the house, and come in the back door, or walk to the end of the driveway and back several times. Who needs all those commercials?

"Often my husband joins me, or one of the grandkids, so it becomes fun. And when I go to any of the grandkids' soccer or baseball games, I'll walk around the field instead of sitting there the whole time."

After about four months, Tina lost 10 pounds and noticed that her energy level was back to where it had been when she was much younger.

"At the level before the kids wore me out," she joked. After six months, she realized she wasn't hurting anymore, that she had no need for pain medication.

"Before, my kids were worried about my health, and now they see the changes and cheer me on."

Tina reversed the direction of her health by stepping forward—literally and figuratively. She sat less and moved more. It was nothing dramatic but it was enough to remove herself from the ranks of the sedentary, unhealthy, and habitually tired majority of Americans (and most other Westerners as well). She went from being busy and inactive to being busy and active.

The program that recharged Tina's life was influenced by ideas and research generated at the Cooper Aerobics Center in Dallas, Texas, the leading medical fitness facility in the world. Two of us have been intimately involved in this amazing operation—Dr. Mitchell as medical director of the center's renowned clinic and Dr. Church as the medical director of its research branch.

Since 1970 more than eighty-five thousand patients and many thousands of fitness study participants have come through our doors. We record the details of their health, diet, activity, and cause of death when they die. This ongoing collection of information constitutes the world's largest fitness database, funded since 1984 by the National Institute of Aging. Our own research specialists, as well as researchers from all over the world, tap into this huge bank of data to study and report on the relationship between physical activity and health, disease risk factors, and causes of death.

In both our clinical and research activities, we see many sedentary individuals. For instance, about a third of our patients are employees sent by their companies for checkups. They come because their companies pay their way. Many of them have typically unhealthy lifestyle habits and truly represent the sedentary state of America.

The large number and variety of individuals we see give us unequaled clarity on the impact that physical activity has on health. We know unequivocally, beyond any shadow of a doubt, that a sedentary lifestyle directly *causes* chronic disease and a shorter life span regardless of whether you are thin, overweight, or obese. Yet this simple fact of life is commonly ignored, overlooked, or underestimated, even by doctors.

The direct and indirect costs of idleness in the United States alone exceed $150 billion a year, or roughly 15 percent of the country's health-care budget. Twice as many people die from sedentary living than from viruses and bacteria, and more die from inactivity than from firearms, illicit use of drugs, sexually transmitted diseases, and automobile accidents combined. In a 2002 analysis of medical expenditures among state health plan members, researchers from Blue Cross Blue Shield of Minnesota linked physical inactivity to 31 percent of heart disease and stroke cases, incidents of colon cancer and osteoporosis, and nearly 12 percent of anxiety and depression cases.

According to government statistics, approximately 75 percent of U.S. adults are sedentary. By definition that means they sit most of the time and are physically active for fewer than the recommended 150 minutes per week. The percentage is really misleading because official statistics rely on self-reporting surveys where individuals estimate their own activity level. When you ask people to fill out questionnaires, they grossly overestimate the time they spend exercising. So data indicating that just a quarter of Americans meet the general criteria for physical activity probably are an exaggeration.

Frank Booth, Ph.D., a professor of physiology at the University of Missouri, has coined the term *sedentary death syndrome* to describe the impact of the ongoing physical decline of the human species. "A subpopulation of genes, which have functioned to support physical activity for survival through most of humankind's existence, require daily exercise to maintain long-term health and vitality," Booth points out. "Type 2 diabetes is an example of a sedentary death syndrome condition, as it is almost entirely preventable with physical activity."

The tragedy in all of this is that most sedentary people can easily convert their self-destructive "deathstyle" into a healthy lifestyle. We know because we have seen it happen repeatedly. What's more, it can be accomplished with just minutes a day of low-dose physical activity. That's enough to reap a high dose of benefits—starting within days.

If the notion of rigorous exercise turns you off, this book has some very enticing, comforting, and practical information for you. To make yourself healthier—as Tina did—you don't have to go out and jog or run a marathon. You don't have to join a gym.

Our research has also given us a unique perspective on the over-

weight and obesity problem that experts say makes people more vulnerable to illness and early death. The experts predict, in fact, that excess weight will soon pass smoking as the number-one preventable cause of premature death. Our research sees the weight issue differently. We say that the problem is not so much the weight, but the lack of physical activity. Regular activity, even if you are obese, protects your health more than if you are thin but physically inactive. Whether you are underweight, normal weight, or overweight—a lack of routine physical activity puts you at higher risk of developing premature disease.

To us, a sedentary lifestyle already represents the overall number-one preventable cause of premature death. Becoming physically active—even to just a minimal degree—is probably as important to our health as quitting smoking is for a smoker.

How Much Activity Do You Need to Be Healthy?

In 1970 Kenneth Cooper, M.D., founded our center after he wrote the best seller *Aerobics*, the book that started the jogging craze. *Aerobics* changed the way people, including medical professionals, regarded physical fitness. Until its publication, relatively few devotees took regular exercise seriously. Most people regarded time spent on physical activity as a luxury, certainly not as a necessity.

In the following years, Dr. Cooper championed the idea that the more you exercised, the better your health would be. If you walked, you should walk faster and farther. If you walked fast, you should jog. If you jogged, you should jog faster and farther. Push it. Do more. That was the mantra of fitness—then.

It was our own database that changed this perspective. Beginning in 1989, we began to see evidence that even a little physical activity goes a long way. The evidence has grown ever since. We've learned that the benefits of fitness are assuredly not limited to high-performance athletes, gym addicts, or those who "grind it out." As our most recent studies indicate, the benefits start with much less activity than is commonly recommended.

In the 1990s we learned through a study appropriately dubbed "Project Active" that you can readily accumulate activity minutes throughout

PHYSICAL ACTIVITY VS. EXERCISE

Physical activity means movement. It comprises simple things you can do in your daily life to get you moving and off the chair or couch, or away from the TV or computer.

Exercise is a type of physical activity for which you set time aside for bodily exertion. You can be very physically active yet never actually exercise.

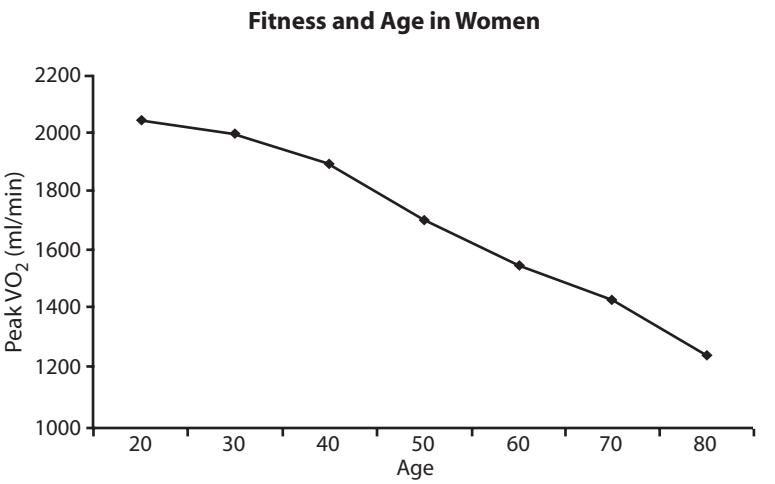
the day, even on workdays, to get health benefits similar to those gained by somebody who works out at a fitness center. You can lower your blood pressure, lose body fat, protect your heart, and have a lot of fun in the process just by logging 30 activity minutes as part of your regular daily schedule. During this time we began recommending the step counter, a simple device you can clip onto your clothes. Keeping count of your steps enables you to challenge yourself each day to take more steps than you did the day before. It is also a fun way to explore myriad innovative ways to accumulate activity minutes. Over the years the step counter has proven to be a winner, a great motivator for starting or restarting even the most sedentary folks on a fitness quest. Later in the book we will show you how to use it.

Our Postmenopausal Study: Less *Is* Good

No single piece of research illustrates the promise of low-dose physical activity on fitness and health better than a recent study we did with postmenopausal women. More than one in three American women are postmenopausal. When they enter this stage of life, their risk of heart attack or stroke increases dramatically.

We don't have a lot of good therapies to reduce the risk for heart attack or stroke. Hormone replacement has been disappointing, and many doctors now oppose it.

We wanted to find out whether physical activity could lower the risk of such incidents. We know that fitness declines as a person ages. Experts believe, as the chart below dramatically shows, that the rate of fitness decline is about 1 to 2 percent a year. We also know that one of the strongest predictors of premature death is a low level of fitness. So to us,



The decline of fitness in women as determined by VO_2 max (the maximum amount of oxygen the body can consume during intense exercise), a measurement used to determine an individual's aerobic fitness. (Source: Fleg JL, Morrell CH, Bos AG, et al. *Circulation*, 2005.)

fitness represents a natural variable to improve in an effort to impact longevity.

In 2005 we designed a study to determine how much regular physical activity postmenopausal women would require to either maintain fitness—that is, to prevent a fitness decline—or to increase fitness in order to improve the premature death rate and overall quality of life. We enrolled 464 women with an average age of fifty-seven into the six-month study. It was the largest single physical activity experiment conducted with postmenopausal women in the world and probably the largest conducted with women at a single site.

We recruited participants by advertising in the Dallas-area media. On average the respondents were more than 30 pounds overweight, had elevated blood pressure, and were extremely sedentary. Many were beginning to have substantial health issues. We felt our participants were fairly representative of a large segment of American women.

The women came to our center and alternated between walking on a treadmill and riding a stationary bicycle. The intensity level was very low, barely enough to cause a sweat—a walking pace just above a stroll and a cycling pace slightly exceeding light pedaling. We looked at three

different durations of physical activity: approximately 75, 150, and 225 minutes per week. We performed a fitness test on each participant before the start of the study and after its conclusion.

Doctors commonly recommend 150 minutes of physical activity a week, based on 30 minutes five days a week. In our study, we found that even 75 minutes a week—accumulated in three or four sessions—was enough to not only prevent a loss of fitness over the course of six months but to actually increase a woman's fitness level. That's the equivalent of about 15 minutes five days a week. To be sure, the benefits of 150 minutes a week were greater, and the benefits of 225 minutes were somewhat greater than that, but the gains from minimum activity were significant.

We were surprised and even amazed at how well the 75-minute group fared in the study. Even one-half the common prescription for physical activity paid off substantially in terms of health benefits and the potential to neutralize vulnerability for many diseases.

The results were eye-opening:

- All groups involved in the study lost two pounds on average. (This included the control group, which did not participate in any physical activities. We think that hearing us speak about eating healthier inspired them to make dietary changes at home, which in turn caused their weight loss.)
- Only the physical activity groups lost dangerous belly fat. (You will learn more about this type of fat in the next chapter.) The participants were delighted to see their waist circumference shrink by 1 to 2 inches on average.
- We saw improvement in blood sugar in all activity groups.
- Among physical activity participants there was an across-the-board improvement in heart-rate variability, which would reduce a tendency toward dangerous heart rhythms.
- Out of all the study's participants, 91 percent completed the entire study and 97 percent complied fully with what we asked of them. We regard this high participation rate as both a reflection of the good work of our staff as well as the reality that a simple physical activity program is very doable even for sedentary women. Our participants were not overwhelmed. Those who dropped out usually did so because of a major life event, such as illness in the family.

Afterward, many of the participants told us the experience was a blessing at a time of life when they otherwise would have kept going downhill physically. They continued to stay active, to enjoy their newfound energy, and to get more out of life. Some mentioned that their clothes fit better. One woman said she got her curves back. Another said the study changed her life. Her family and friends kept telling her how good she looked, and her self-image soared.

Our study offers an affirmative and practical answer to the frequently asked question among fitness researchers: Do sedentary individuals achieve an improved fitness level if they perform less physical activity than the commonly recommended amount? Our study says yes, significantly so, and even at a time in life when their fitness level has dropped considerably.

We try to steer people in the direction of 30 minutes on most and preferably all days of the week, but the study's striking result is that even 15 minutes a day of low-intensity activity has big benefits. That has big practical implications. Among aging or very unfit populations, 150 minutes of activity each week may not be realistic. However, at least 75 minutes should be doable and will help deter fitness decline and reduce the risk of dying prematurely. A more modest goal, yet with solid gains, may keep you on a fitness program.

At our clinic, sedentary patients regularly tell staff doctors that they feel better even if they can only manage walking two or three times a week for 15 minutes at a time or riding a stationary bike for as little as 5 minutes three times a day. That's only 45 minutes a week! It proves to us that any level of activity is better than none. A little bit seems to go a long way. For us, and indeed for public health policy, that's big news and a big payoff. And that's why we wrote this book.

Why Physical Activity Works So Well and So Fast

Physical activity affects every cell in the body, which is precisely why it is such good mind-body medicine and why you pay a heavy price for being sedentary.

Most people know that physical activity is a good thing. They just don't know how good. They seem to equate physical activity with leaving the mayonnaise off their sandwich at lunchtime. In other words, it is not such a big deal whether you do it. How wrong they are! Briefly, here's what physical activity does for you:

Movement increases your blood flow. Nothing ensures good blood flow and prompt delivery of raw materials to the trillions of cells in your body as well as physical activity does. The cells depend on the oxygen and nutrients supplied by the blood to do their various jobs—from the heart muscle cells that keep your heart pumping to the brain cells that keep you thinking and coordinating your countless activities.

If your gas line gets clogged, your car sputters. If your blood vessels are clogged and the blood delivery is sluggish, your cells can't do their jobs well. You sputter. In time you'll develop sickness wherever cells are the most compromised. Healthy cells make up healthy organs and healthy organs make up healthy bodies, so good blood flow is critical.

Movement makes your nervous system work better. Nerve cells also benefit from better blood flow. Physical activity is able to quickly shift the 100 billion neurons in your brain from a revved, stressed state—more vulnerable to dangerous cardiac rhythms and heart attacks—to a relaxed state.

We routinely measure the electrical impulses in the heart and find that physical activity rapidly changes the level of heart nervousness. That's important because the cardiac electrical system controls the speed of your heartbeat. You want this system working smoothly so that it efficiently responds to changing demands for oxygen, speeding up the rate when you are active and slowing it down when you are at rest.

Movement improves your metabolism. Metabolism refers to the ongoing chemical processes within living cells and organisms that are necessary for the maintenance of life. For example, muscle tissue is the biggest single consumer of glucose (blood sugar that has been broken down from dietary carbohydrates) and a minimal amount of physical activity helps keep muscles happily utilizing blood sugar. This helps prevent blood sugar and insulin levels from rising dangerously in the body—a condition that leads to diabetes and damage to nerves, blood vessels, and

the liver. Physical activity also helps the body clear excess fats (triglycerides) from the bloodstream, preventing them from being deposited in the liver or spleen, or near the heart.

No pill or substance can produce as many health dividends as physical activity can. When you add up activity's basic contributions to your well-being the sum total is astounding. Here's a short list of the benefits:

- Better utilization of blood sugar (meaning better protection against diabetes)
- Reduced blood pressure
- Lower risk of cardiovascular disease (heart attacks and stroke)
- Lower risk of certain cancers, such as colon cancer
- Lower risk of metabolic syndrome (a symptomless condition that sets up the body for serious chronic diseases)
- Reduced stress
- Improved mood, reducing incidents of depression
- Improved bone and joint health
- Improved recovery from illness by promoting the body's healing mechanisms
- Healthier and stronger muscles—a key to healthy aging
- Positive weight redistribution in your body—you look better and your clothes fit better
- Less belly fat that is dangerous to your health

Quality of Life—the Best Motivator

Did you know that even if you have been inactive for years, you begin to derive benefits the moment you launch into physical activity? Within days of starting our program, formerly sedentary people often tell us how much better they feel and how much more energy they have. It can work that fast. It's as if their bodies are saying thank you for giv-

ing them what they need. If you are feeling down, for instance, just go out and take a walk, and when you come back you'll likely be feeling better.

This kind of patient feedback about improved quality of life is what really seems to get people to stick with physical activity after they have started on a program. The statistics bear that out. For this book we crunched numbers on more than ten thousand patients—both men and women, sedentary and active—who have gone through our clinic since 1998. Among them were 1,077 individuals in the low-fitness category, 3,555 who were moderately fit, and 5,679 who were highly fit.

We analyzed specific quality-of-life responses, which they had given to simple yes or no questions on medical history forms: questions asking, for example, whether they had frequent heartburn or lower back pain. The survey produced compelling evidence for the big difference physical activity makes on everyday living, not just on medical test scores. Here are some examples of positive results gained from an activity program:

- Improved sex drive and reduced impotence
- Improved energy, both short- and long-term
- Improved sleep
- Reduced snoring
- Less heartburn
- Reduced need to urinate at night
- Reduced joint, muscle, and back pain
- Fewer headaches
- Improved memory in older people

Do you know of any pill or substance that can produce all these quality-of-life dividends? These improvements, of which even most doctors are unaware, are fabulous motivators for sustaining physical activity. Nothing makes us happier as physicians than when previously inactive and unhealthy patients tell us they started a physical activity routine, stayed with it, and now feel great. Some of these are patients we have hounded for years, nagging them at every checkup about the dangers of inactivity.

So why, we ask, are they sticking with it now after all these years? They'll often answer:

- "My back isn't bothering me for the first time in years."
- "I sleep better."
- "I'm not snoring anymore."
- "I don't have heartburn anymore."
- "You said that I would need to take more medication if I didn't do something about my [blood sugar, blood pressure, etc.], so I decided to do something."

Something clicked along life's journey for these patients. Maybe they just got tired of our badgering them. Or maybe they went through a health crisis. Whatever got them started, it's often the realization that they feel a whole lot better that keeps them active for the long term. Of course, improved blood and medical tests usually give objective backing to subjective improvements, but in our experience that's not what gets people to stick with it. It's the quality-of-life and daily existence factors that do it—factors that medical professionals tend to dismiss but which we find are real motivators. Simply said, we see happier and healthier patients when they stick to an activity program.

We do not for a moment discount other pillars of a healthy lifestyle, such as nutrition and stress reduction. They are extremely important, and in fact, we cover these elements in all patient education programs at our center.

What's Your Activity Level?

We've got two simple ways for you to determine just how sedentary you are. First, answer the simple self-assessment questions below about your activity level. Second, determine your actual daily activity with a step counter.

Based on our experience with thousands of subjects in our research projects, we know people tend to distort their survey answers to appear more active than they really are. For that reason, we put more emphasis on the second part of this test—the step counter.

Answer yes or no to the following questions:

Do you have a job where you spend most of the day at a desk?

When you get home from school or work, do you eat supper in front of the TV?

Do you reserve your evenings for TV or a movie?

Do your weekend plans usually consist largely of sedentary activities, such as eating, drinking, and sitting around?

Are you unlikely to get 20 or 30 minutes of physical activity a day on most days of the week?

Do you pay somebody to do your housework or yard work?

When you walk into a two- or three-story building, do you take the elevator to go to a higher floor?

If you have a dog, does someone in your family other than you routinely walk it?

Does walking a block or going up a flight of stairs make you out of breath?

Do you own exercise equipment that gets more use as a clothes hanger or laundry rack than as it is intended to be used?

If you answered yes to seven or more questions, you are supersedentary. You should change your ways. If you answered yes to four to six questions, you are in the sedentary ballpark and could improve your fitness level. Four or more yes answers make you a candidate for our Plan A startup program, which you will find in part two of this book.

If you answered yes to three questions or fewer, you are doing pretty well. Check out our Plan B recommendations in part two of this book.

For the real test of your physical activity, we would like you to buy an inexpensive step counter and see how many steps you take in an average day. This exercise will confirm your activity level. You can pick up a step counter (sometimes called a "pedometer") at any sporting goods store or order one from our center (on the Internet at

www.coopercomplete.com/books.php/, or by phone toll-free at 1-888-393-2221). A step counter is a great tool for determining how active you are—or aren't—and also to jump-start you into a physical activity program.

You can clip a step counter to your pants or skirt (for more information on the step counter, refer to chapter 5). Put it on in the morning and take it off at night before bedtime. Make a note of how many steps you take each day for a two- or three-day period. Don't do anything different. Just follow your usual routine.

No one knows exactly how many steps an average American takes each day, but from our research and from patients' responses, we figure that an average sedentary person takes fewer than five thousand steps a day. So if you fall below that number, you are distinctly sedentary. Figure it this way:

Below 4,500 steps means you're very sedentary.

4,500–5,500 steps: You're sedentary.

5,500–7,500 steps: Keep it up. You're headed in the right direction.

7,500–8,500: You're active. But it wouldn't hurt to add even more steps.

8,500 and above: You're good and active. Stick with it.

After doing the test, hang on to your step counter. You're going to rely on it to move yourself out of the sedentary category and into the active one. You'll be amazed, as you will find out in chapter 5, how much fun the step counter can make this process.

How to Use This Book

Our book is loaded with lessons we have learned from thousands of patients and study participants. Think of it as a road map to transport you directly to your fitness, health, and weight goals. There's something here for everybody.

In part one you'll find information that you need to know about physical activity:

- A strong argument about why physical activity trumps weight loss—being skinnier does not necessarily make you healthier.
- The lowdown on killer belly fat and how easy it is to neutralize it.
- A clear understanding of how physical activity protects you against a wide range of common ailments such as diabetes, heart attacks, and the insidious metabolic syndrome.
- Never before published information from our patient survey revealing how physical activity improves core quality-of-life issues related to mood, energy, sleep, digestion, elimination, and sex drive.

In part two you'll get the practical, how-to information:

- For people who are currently sedentary, we have laid out a practical and enjoyable prescription for infusing daily life with low-dose physical activity. We call it "Plan A for Active." It can restore zest and vitality to even the most sluggish of persons within thirty days. We'll show you how to start up gently and safely, and how to stick with it; and we'll give you effective strategies for overcoming the usual reasons that people slack off. We've also included recommendations on how to incorporate some better eating choices—not a diet—after you have sustained Plan A for a month. Some easy-to-make food upgrades multiply your benefits. You get healthier bit by bit, step by step, bite by bite.
- For people who graduate from Plan A, or who are already active and want to maximize their functional fitness, we have compiled a comprehensive approach to physical activity. We call this "Plan B for Balance." Here is where we use the term *exercise*, and have you set aside time specifically for physical activity to boost the heart, lungs, and muscles, and to increase joint flexibility for better mobility. We recommend basic fitness principles relating to frequency, intensity, and time of exercise. You apply these principles as you pursue cardiovascular, strength, and stretching fitness in a balanced way, and focus on more than just one single aspect of exercising.

- For individuals with excess abdominal fat and weight, we have put together a weight-loss program—"Plan C for Calories." We'll show you how to burn more and eat less, with a program that includes a more intense exercise schedule and a restricted-calorie diet. Long ago we learned that those two things are necessary in order to lose weight and *keep it off*.