

eXerlog

exercise log book and daily planner
2010

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- **Bad-heart survivor’s guide to healthy exercise.**
- **Helpful resources.**
- **A chart to set and track your fitness goals.**
- **Daily exercise log.**
- **Daily personal planner.**

EXCERPT

Earle Gray

eXerlog

exercise log book
and daily planner.

first edition 2010

By Earle Gray

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Gray Matter Ink
Earle Gray
17 Lang Court, Lindsay, Ontario, Canada, K9V 6E5
email: earle.gray@cogeco.ca. URL: <http://www.earlegray.ca>
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*For the medical staff at Ross Memorial Hospital,
especially the two wonderful nurses who zapped
me back to life, Marian Graham and Joan Gilroy;
but most importantly for our number one life saver,
Dr. Maria Cescon, who has saved not only
my life, but more importantly, the life of my Joan, my
soulmate for nearly six decades, also from heart trouble.*

Books by Earle Gray

Impact of Oil: The Development of Canada's Oil Resources (1969)

The Great Canadian Oil Patch (1970)

Super Pipe: The Arctic Pipeline—World's Greatest Fiasco (1979)

The Great Uranium Cartel (1982)

Wildcatters: The Story of Pacific Petroleums
and Westcoast Transmission (1982)

Free Trade, Free Canada (editor, lead contributor) (1989)

Forty Years in the Public Interest: A History
of the National Energy Board (2000)

The Great Canadian Oil Patch. Second edition. The
Petroleum Era from Birth to Peak (2005)

Ontario's Petroleum Legacy: The Birth, evolution
and challenges of a global industry (2008)

Preface

I have no qualifications or expertise in exercise physiology or medicine of any kind. *eXerlog* has little to do with what I say about exercise and physical fitness. It has to do with what the world's top experts say. I have merely tried to summarize the essence of some of their knowledge and advice, in everyday language, and organize a log book that reflects that knowledge so that you can conveniently set your fitness goals and track your progress toward them.

Plus a little of my own experience. That experience started in 1989 when a cardiac arrest almost hurled me into the next world. I began to study what the experts had to say about exercise, diet, physical fitness, and how to make and keep my heart healthy. I tried to follow that advice.

A few years after that heart blip, I began to think about using what I had read and studied to assemble an exercise journal. I started to put *eXerlog* together, but the job got shunted aside by the pressure of researching and writing a few other books, as well as other obligations and commitments. *eXerlog* lay forgotten, but not the kernel of what I had learned, nor the effort to put it to use.

Over the years I noted my exercise activities in my journal, if not quite as regularly as I might have. Frequent checkups with our family doctor and stress tests and other checkups once a year or so by my cardiologist helped keep track of my progress. I would have done a better job if I had completed *exerlog* in the first place. It's also a good reminder of important fitness and health care information that is too easy to lose sight of over time.

The uncompleted *eXerlog* was recently discovered, and the time seemed appropriate to finish it. I was preparing for a challenge: taking my 78-year-old damaged heart on a climb up 1,776 steps to the top of one of the world's tallest structures, Toronto's CN Tower. In the weeks and months of preparation for that climb, using a draft copy of *eXerlog* to keep track of my exercises every day has been a great help.

Exercise physiologists say that record keeping is essential in setting and achieving goals. That's why you would almost certainly be required to complete workout records at any recognized cardiac rehabilitation program.

Behind *eXerlog* is the advice of experts, two decades of personal experience, and an interesting challenge

Live longer — and better

The odds are pretty good that persistent, regular, and moderately vigorous exercise will help you live longer—and better. To achieve those rewards requires dedicated effort, week after week after week, virtually every week for the rest of your life. If that sounds a bit grim, it needn't be. An exercise program can, and should be fun, if you set out to enjoy yourself. So you can have a good time while you're earning better health.

eXerlog can help you earn those benefits, and add to your enjoyment. Keeping a record of the effort you put into exercising will help you reach your goals. And seeing the progress you make will add to your incentive and satisfaction.

It certainly has for me.

My exercise program started the day I arrived home from the hospital after the March, 1989 heart attack (myocardial infarction) followed by the cardiac arrest that put me a whisker away from death. I was allowed to start out by walking half the distance to the nearest telephone pole.

Ten years later, at age 68, I still exercised four or five times a week. I took walks of three to 12 miles and cross-country skied up to 15 miles. Every fall I stacked four bush cords of firewood. One armload at a time, I carried it up four steps to our back porch where it was kept for the winter. I felt as good and as energetic as I had 20 years earlier. I worked harder than ever and never enjoyed life more.

Another 10 years later, at age 78, I've slowed down a little. I don't work as hard. I still ride and row my exercise machine anywhere from one to two hours at a time. Sometimes three hours or so, if I'm watching a baseball game on TV. I don't set any speed records and I stop frequently for a glass of water. It's the type of stationary bicycle in which the arms swing back and forth with the handlebars, for a reasonably good workout. I climb the step from our main floor to our basement as much as 50 flights (650 steps) at a time, equivalent to climbing at least a 40-storey office building. And I still go on two- to 12-mile walks, although I no longer hike along as fast.

Exercise, diet and attitude can probably extend and enhance your life, too. Of course, there's no guarantee. You could start an exercise program one week and die from ptomaine poisoning the next. But unless all the medical experts are wrong, the odds are very good that exercise, diet and attitude can help dramatically improve your physical fitness and wellbeing. As granddaughter Nancy would say, "It works for me."

The heart of the matter

When it comes to physical fitness and wellbeing, your cardiovascular system—your heart, lungs, arteries, and other vital parts—is the source, pump and transportation system that supplies your muscles and cells with oxygen. Food is the ultimate source of the energy used by your muscles. But your muscles need oxygen to burn this energy, just like a fire must have oxygen to burn wood. And every muscle in your body, from those that twitch your eyebrows to those that curl your toes, depends for its supply of oxygen on your cardiovascular system. The harder you work your muscles, the more oxygen they need, and the harder your cardiovascular system must work to supply it. If your cardiovascular system breaks down and stops working—perhaps because you've over-taxed it or more likely because you've let it get out of condition—you drop dead.

But it might not be as sudden as that. If your cardiovascular system gradually runs down over a period of decades, so do you.

By far the most effective way—perhaps the only way—to keep your cardiovascular system in good condition for as long as possible is by exercise and a healthy lifestyle. Here is what can happen when you reach middle age, according to Dr. Roy J. Sheppard, Director of the School of Physical and Health Education, and Dr. Scott G. Thomas, Assistant Professor of Rehabilitation Medicine, at the University of Toronto:

"If you do not use your physical capacity to exercise, you are surely going to lose it; your heart will cease to pump as vigorously as it could, your muscles will become weaker, flabbier and lose flesh, and your joints will become progressively stiffer until you find it difficult or impossible to carry out the simplest tasks such as putting on your socks or lifting yourself out of a chair."

Your mental as well as physical ability can also be affected by lack of exercise. As you age, the flow of blood to the brain inevitably deteriorates. But it deteriorates faster without exercise. And the results of this, according to Dr. Terence Kavanagh, founder of the Toronto Rehabilitation Centre, are "apathy, forgetfulness, depression and many of the other hallmarks of senility."

Fortunately, you can avoid—or at least defer—such fate by regular and moderately vigorous exercise. Because physical activity involves many muscles, joints and organs, exercise can help improve the condition of more than just your cardiovascular system and can provide many ancillary benefits. It

can improve not only the ability of the cardiovascular system to deliver oxygen, but also the ability of your muscles to use it. And the more oxygen your body can use, the more energy you have. *The Wellness Encyclopedia*, published by the University of California, Berkley, puts it this way: “Since every cell in the body requires oxygen to function, there is no more basic element to fitness than this—to see that the heart, lungs and circulatory system do their job.”

Scores of extensive medical studies have all confirmed that regular exercise can significantly reduce the risk of heart disease, the largest single cause of death in North America. “If you have a fit cardiovascular system, then the odds are that you will live for a long time,” according to Dr. Kavanagh.

Not only longer, but better. Kavanagh, who has supervised exercise training for thousands of cardiac patients, asserts that “sedentary middle-aged individuals who begin to train for the first time when they are in their forties or even their fifties are capable of vast improvements in physical condition and performance.” The practical result, according to Dr. Sheppard, is that a middle-aged or elderly person who keeps physically active “is capable of as much as a sedentary person who is 10 to 20 years younger.” And if the physiological benefits were not enough, there are also impressive psychological benefits from exercising: among other things, reduced depression, anxiety, tension, anger and hostility, and increased vigour, according to Dr. Kavanagh. “There is no other treatment for the symptoms of aging that can match the impact of exercise,” conclude Doctors Sheppard and Thomas.

So, why aren't you busy exercising—instead of just sitting there?

How miracles are performed

The miracle benefits of exercise are achieved primarily by increasing the ability of your cardiovascular system to pump oxygen-laden blood throughout your body, and the ability of your cells to use more oxygen. But it's not simply a matter of making your heart beat faster: it will beat only so fast. If you run as hard as you can to catch a bus, your heart will certainly beat faster. But that heavy pounding in your chest tells you that your heart is now pumping as fast as it can.

Everyone has a maximum heart rate, or pulse, which is measured in beats per minute. As far as medical researchers can tell, exercise will not increase the maximum speed at which your heart is capable of pumping. In fact, your maximum heart rate diminishes slowly with age, and will do so no matter how much you exercise. A slower maximum heart rate combined with diminishing lung capacity can reduce your maximum oxygen intake by as much as half over a period of three or four decades.

But while exercise can't increase your heart's top pumping speed, it can substantially increase the volume of oxygen pumped with each stroke. By increasing the stroke volume, the oxygen-carrying capacity of your blood, the ability of your cells to utilize that oxygen, and other improvements, you might be able to as much as double your oxygen intake capacity.

Calculating the body's ability to consume oxygen is one test of physical fitness. Your body's oxygen intake capacity is expressed in milliliters of oxygen per kilogram of body weight per minute. A typical reading might be expressed as $\dot{V}O_2=80\text{ml/kg/min}$. We will consider this in more detail later.

If your heart pumps more oxygen with each stroke, that means it doesn't have to work as hard to supply the oxygen demanded by your body for any given amount of exertion or activity. And it just seems like common sense that if the pump we call our heart doesn't have to work as hard, it might last a little longer.

Building a bigger, stronger heart is just one way in which exercise increases the capacity and efficiency of our oxygen delivery system. Another major effect of exercise is to add to the delivery system throughout the body by opening up new blood capillaries in the skeletal muscle tissue. This doesn't happen gradually, but in spurts. In his best-selling book, *The Healthy Heart Program*, Dr. Kavanagh describes how “these new capillaries, so small that they can be seen only under a microscope... ‘open up’ almost like a budding flower seen under time-lapse photography, and in response to the stimulus of

repeated and prolonged training sessions.” So if your exercise seems to result in bursts of improvement, it’s likely no illusion.

If our coronary arteries become clogged, restricting the flow of blood and oxygen, exercise can help overcome this by building new branches of coronary arteries known as collaterals. But even more importantly, exercise can help avoid the clogging of the arteries in the first place. Known as atherosclerosis, or more commonly as hardening of the arteries, this clogging of our pipes can cause angina pain, a heart attack, or—if it traps a clot that completely blocks the flow—sudden death.

Cholesterol is the villain in atherosclerosis, and diet and exercise are keys to defeating it. More on the role of cholesterol later.

While exercise helps the cardiovascular system deliver more oxygen, it also enables the muscles to extract the oxygen from the blood stream more efficiently—in effect, an improvement in both the transportation and delivery end of the system.

Exercise can help alleviate yet another contributing cause of heart problems, psychological stress. Stress such as the pressure and worry of work or business, intense competition to get ahead, financial concerns, family problems, physical danger—all these can contribute to a buildup of excess adrenalin in your bloodstream, which in turn contributes to the risk of heart problems.

Finally, exercise can help you lose weight—if that is one of your objectives—by burning up excess calories stored in your body in the form of fat. The more you exert your body, the more fuel it needs—sort of like stoking the fire of a locomotive to make the train run faster. The fuel is fat, derived from the food you eat and fed, together with oxygen, to your muscles by your blood. Whether you gain or lose weight is primarily a function of how many calories you consume versus how many you burn up. So if you want to lose weight, you have essentially three choices. You can consume fewer calories. Or you can exercise to increase the number of calories burned. Or—best of all—try doing both.

All by itself, exercise won’t necessarily lead to a longer or better life. It is only one element in a healthy lifestyle. Other elements essential to a healthy life include proper diet, mental and emotional attitude, non-abuse of alcohol, tobacco, and drugs. One of the great things about exercise, however, is that it strengthens your motivation to pursue a healthy lifestyle, and the physical, mental and emotional resources that may be required.

Different strokes for different folks

Be cautious if you are launching an exercise program for the first time. Dr. Kavanagh warns:

“We know from studies that if you don’t exercise at all and you engage in a sudden bout of vigorous activity, you can increase your chances of having sudden death by a hundred times, a hundred fold.”

Consult your family physician or exercise physiologist.

“If it ain’t fun, don’t do it.” That ought to be the motive for exercisers. Forget Jane Fonda’s advice: “Go for the burn. No pain, no gain.” Wrong, say the health exercise professionals.

Increasingly the experts agree that moderate exercise provides the best returns in improving or maintaining physical fitness. Too little does no good. Too much takes you past the point of rapidly diminishing returns and into the realm of increased risk of injury or health damage. Unless you are an aspiring professional athlete, enjoy 10-mile runs, or want to compete in a triathlon, the surprisingly small additional health gains that result from more than just brisk and regular exercise are probably not worth the effort and risk.

But while the experts agree that there is probably an optimum amount of exercise for each of us, in terms of effort and fitness rewards, they don’t all agree on what that is.

There are generally considered to be three components of physical fitness: body weight and composition; muscular strength, endurance and flexibility, and aerobic or cardiovascular fitness. While aerobic fitness generally ranks first, muscular strength and flexibility are also important.

Exercise is usually measured three ways: frequency (generally the number of times per week); duration (how long you exercise each time), and intensity (how hard your heart, lungs and muscles work, usually measured by how fast your heart beats).

Another way to measure how much you exercise is to calculate the number of calories you burn. We’ll come later to a more detailed consideration of this.

Exercise can be classed as either anaerobic or aerobic. During the intense exertion of anaerobic activity, we consume oxygen at a faster rate than our

cardiovascular system can supply it. In effect, we borrow the oxygen from glucose and glycogen, stored in our liver and muscles. *We can keep this up for no more than two minutes, at most*, after which we are left huffing and puffing as our systems attempt to pay back the borrowed oxygen. Running as hard as possible to catch a bus or being chased up a tree by a grizzly bear are forms of anaerobic activity.

Anaerobic exercises are great training for football players, sprinters, and weight lifters. But most of us will get greater benefits from aerobic exercises, conducted at a slower pace, which does not exceed the capacity of our systems to deliver the needed oxygen.

Exercise physiologists generally believe that in order to improve our oxygen delivery system, or aerobic fitness, we should exercise at a pace that taxes that system in a range of between 50 and 85 percent of its capacity. That is your heart training rate, which we will examine later in more detail.

“For maximum cardiovascular benefits, nothing can take the place of aerobic exercise performed at your heart training rate,” according to researchers at the School of Public Health, University of California, Berkeley.

But how frequently and how long should we exercise?

Three to five times a week is commonly recommended. “If you can’t exercise regularly, you’re better off not exercising at all,” says Dr. Kenneth H. Cooper, founder of the 650-staff Cooper Aerobic Centre in Dallas, Texas, and one of the world’s most widely read authors on exercise, fitness and health.

Dr. Kavanagh at the Toronto Rehabilitation Centre recommends an optimum 60 minutes a day at your heart target rate, five days a week. More than this seems hardly worthwhile: “Those with the time and inclination to train seven times a week show maybe an additional one or two percent increase,” according to Dr. Kavanagh.

Others have claimed that much shorter sessions will do the trick. The *5BX Plan* (five basic exercises for men), developed for the Royal Canadian Air Force and first published as a booklet in 1961, and the *10BX Plan* for women promised total fitness in just 11 minutes a day. A group of exercises developed for the central YMCA in London, England, promised the same thing for just 12 minutes a day. The *5BX* and *10BX* Plans, at least at the top level, are no longer considered suitable for unsupervised exercise because of the risk of injury, and are no longer followed by RCAF members. In any event, most of us will probably enjoy more comfortable exercises that take a little longer to reach the same goals.

Two widely recognized exercise guidelines were issued jointly by the American College of Sports Medicine and the American Heart Association in

2007, updates for their 1995 guidelines. These are “Guidelines for healthy adults under age 65” and “Physical activity and public health in older adults.” The basic recommendation calls for either moderately intense aerobic exercise 30 minutes a day, five days a week; or “vigorously intense” exercise 20 minutes a day, three days a week. In addition to aerobic exercises, the guidelines also call for strength training exercises twice a week, with eight to 10 different exercises, each to be repeated eight to 10 times.

But you may need to do much more. “The 30-minute recommendations is for the average healthy adult to maintain health and reduce the risk for chronic disease,” the ACSM and AHA state. If you want to improve your fitness or lose weight, “60 to 90 minutes of physical activity [five days a week] may be necessary.”

The advice for adults over 65, or those with chronic conditions, such as arthritis, is, “If you can exceed the minimum recommendations, do it.” It also advises seniors to “develop an activity plan with a health professional to manage risk and take therapeutic needs into account.”

And here’s a helpful tip, if you’re hard pressed to find the time to exercise: “Research shows that moderate-intensity physical activity can be accumulated throughout the day in 10-minute bouts, which can be just as effective as exercising for 30 minutes straight.”

The guidelines are available on the web from the ACSM or the AHA. Go to <http://www.americanheart.org/fitness>

Calorie counter

Fitness experts seem to agree that those with sedentary jobs and retired people who want to be physically fit, should perform exercises or brisk physical activity that burn at least 1,000 calories per week, and preferably 2,000. For a 150-pound person, that would be equivalent to walking between about 10 and 20 miles a week.

Counting calories burned is one way to log your exercise activities. If your goal is also to lose weight, calorie counting can also help you win the battle. If you exercise on a machine, a treadmill or stationary bicycle, for example, it is likely equipped with a monitor that will count the calories for you, or at least an approximation. You can also go on the Web and find sites that will calculate calories burned when you enter the appropriate data: your weight, type of activity, and duration. Some sites provide calorie burn charts and leave the arithmetic to you. One web site claims that to burn off the calories consumed in eating a large hamburger and French fries, you would have to walk nine miles.

How many calories you burn in different activities depends, in part, on how much you weigh. A 5'10", 200-pound person who walks three miles in 60 minutes will usually burn more calories than a 5'10", 150-pound person. Other factors include your physical fitness, how efficiently you perform various activities, and ambient temperature and humidity.

With the accompanying Calorie Burn Chart you can easily make approximate estimates of the number of calories burned during various activities, based on the type of activity, duration, and your weight.

If you estimate the calories you burn, you may choose to enter that in your daily log, rather than the number of minutes, miles or time spent walking, running, cycling, stair climbing, or whatever. Or you might record both types of numbers. If you have an exercise trainer, ask her advice.

Warming up and cooling down

Whatever exercises or activities you choose to keep in shape, three things are important to avoid injury or health problems: don't over-do-it; warm up first; cool down after.

Avoiding over-exertion is particularly important if you're just getting started on an exercise program, and as you get older. Don't be in too big a hurry to reach your goals. They might take a year, or even longer, to attain. If you try to rush it too much, you may injure yourself and never reach your goals.

The Heart and Stroke Foundation of Ontario recommends exercising "at your heart target rate, which is the safest and most effective self-monitoring system." Warning signs that you might be exercising too hard include such adverse symptoms as chest pains; severe breathlessness; dizziness; loss of muscle control; nausea; a pulse rate of more than 120 minutes five minutes after you've finished exercising; if you're still short of breath 10 minutes after you've finished exercising.

If you perspire profusely, especially in warm and humid weather, drink lots of water.

You lose salt (i.e., sodium) when you sweat. Should you take some to replace it? Possibly, but probably not. When professional athletes—baseball and football players, for example—work extremely vigorously for two or three hours in hot weather, they sometimes take some salt. But most of us use far too much, and health authorities have been urging us to cut down. Too much salt may lead to high blood pressure, a major risk factor for stroke, heart disease and kidney disease. Health Canada says 1,500 mg of sodium is enough "to promote good health in adults" and recommends that "adults do not exceed 2,300 mg of sodium per day" Yet latest figures show Canadian adults

EXERCISING CALORIE BURN CHART

	Calories burned per pound per minute	Your weight in pounds	Total calories burned per minute	Activity minutes	Total calories burned
bicycling, 25 mph	0.139				
running, 6-minute mile	0.115				
squats	0.096				
jumping rope, 125 per minute	0.089				
bicycle, row machine, 15 mph	0.085				
carrying & stacking firewood	0.080				
snowshoe walking	0.075				
jumping rope, 70 per minute	0.074				
swimming, fast crawl	0.071				
jogging, 6 mph	0.070				
basketball	0.063				
soccer	0.062				
aerobic dancing, medium	0.061				
XC skiing, medium speed	0.060				
hiking, hilly country	0.060				
swimming, slow crawl	0.059				
stair climbing	0.059				
rowing machine	0.052				
lawn mowing, push mower	0.051				
bicycling, 10 mph	0.045				
badminton	0.043				
skating	0.043				
walking, 3.5 miles per hour	0.040				
sex, active	0.039				
golf	0.038				
volleyball	0.037				
tennis, doubles	0.030				
raking leaves	0.025				

If weight loss is an exercise goal, calculating and recording calories burned might help track your progress. One pound of body fat equals 3,500 calories. But to lose one pound of weight by exercising you need to burn 3,500 calories *plus* the calories you would otherwise consume without exercise, possibly 3,700 to 4,000 in total. (With a sedentary life, we typically burn 2,000 calories a day). A 170-pound person walking 3.5 miles per hour consumes about 6.8 calories per minute, requiring about 600 minutes or 10 hours to burn 4,000 calories. Walking five-times a week, the 170-pound person might have to walk two hours each time to lose a pound a week. Estimates of calories burned in physical activity are approximate, and vary with individual metabolism, performance efficiency, ambient temperature and humidity, and other factors.

consume an average of 3,093 mg of sodium daily, double the recommend level and much more than the “Tolerable Upper Intake Level.”

Avoid big, sudden temperature changes when you exercise. Avoid the steam room or sauna immediately after a vigorous workout, until you’ve had enough time to cool down. In very cold weather, cold air rushing down your windpipe can restrict the coronary arteries and cause a heart attack.

Warming up is important in exercising at heart training rates. Gradually increasing the blood flow to the muscles can reduce the risk of pulls and tears to muscles, tendons, ligaments and other connective tissues, and help you to perform more efficiently. You can perform gentle stretch and bend exercises to warm up and cool down, or you can start and finish your exercise at a slower pace. If you plan a brisk walk, for example, the Heart and Stroke Foundation of Ontario urges you to “take the first and last five to seven minutes... at a slow, gentle pace.” You may need longer to warm up in cool weather, and to cool down in hot, humid weather.

If you stop exercising abruptly instead of cooling down gradually, the blood might pool in your legs, reducing the amount going back to your heart. Especially in warm weather, this could cause a momentary blurring of your eyesight, a black flash, and in rare cases, might even be fatal.

Flexibility exercises are increasingly important as we grow older, and they can be part of the warming up and cooling down process, or carried out after. “After your cool down,” suggests the Heart and Stroke Foundation, “stretch your hamstring muscles, calves, Achilles tendons, quadriceps, groin, and lower back, and do a set of neck and shoulder rolls.” U.S. National Team race walker Mark Fenton finishes his five to 18 miles of daily very brisk training walks in style. “One of the nicest times of day for me is when I finish stretching after my cool-down walk,” Fenton says. “I just lie on my back and relax.”

Enjoy, enjoy

The best exercises may be largely a matter of deciding which you enjoy most. If you don’t enjoy an exercise, you’re not likely to do it too regularly, and no matter how good it might be in theory, it won’t do you any good if you don’t do it and keep it up.

Many enjoy the exhilaration of running or jogging several miles every day. Tens of thousands of people recovering from heart attacks have benefited from the jogging and walking programs prescribed by the Toronto Rehabilitation Centre. Dr. Kavanagh advocates building up gradually to a running rate of six miles in 60 minutes (72 minutes for those over 75), five times a week, for maximum aerobic benefits.

But brisk walking is the preferred exercise for a greater number of people. In recent year, walkers have been joined by the ranks of former runners who became the walking wounded, suffering back pains, leg muscle pains, swollen ankles, Achilles tendonitis, and other ailments—perhaps because they sometimes failed to follow safe procedures. Because of its low impact, walking doesn’t impose the same risks, and it has legions of staunch advocates. “Walking briskly, not just strolling, is the simplest and also one of the best forms of exercise... the most available, the least expensive, and the most productive exercise there is,” according to the American Heart Association. “For a person past the age of 50 who takes on a jogging program, the potential danger outweighs any benefit,” according to Harry J. Johnson, chairman of the Life Extension Institute in New York. “Brisk walking is infinitely safer... it can keep you middle-aged for life.” According to the President’s Council on Physical Fitness in the United States, “Walking is actually one of the best all-around physical activities... Walking costs nothing; there are many daily possibilities for it, and it can be enjoyable. Develop a brisk step, breathe deeply, and swing your arms.”

Walking may take a little longer than jogging to burn the same number of calories, but it can be time well spent. When you walk you can exercise not only your body but also your mind, in a way that’s difficult to do when you’re running or jogging. When Adam Smith, the great Scottish professor of moral philosophy, took long, solitary walks through Glasgow, the result was *The Wealth of Nations*, surely one of the 10 most influential books ever written. U.S. Supreme Court Justice William O. Douglas said that when he had a knotty legal case to consider, the best thing he could do was go for a walk. Another prominent lawyer has said that an hour’s walk frequently does more good than a whole day spent in the law library. Walking has never failed to provide an answer for me whenever I have been faced with a problem, decision or task that needed thinking through. Most challenges have been simple one-mile problems while others end up as eight- or 10-mile problems.

There’s not much fun about walking, however, when it’s terribly cold, wet or icy. That’s when indoor exercise equipment is particularly appreciated. Stationary bicycles are the most popular and the most widely recommended by doctors. The type that utilizes moving handlebars to exercise your arms as well as your legs offers a more complete workout, and can burn up calories at an amazing rate. Again, you can make double use of your time. While you pedal and row, you can listen to music, watch television, or play educational or instructional videos on tape or DVDs. I have found this a help in learning how to operate a new computer application.

Making progress and tracking it

eXerlog is intended to help you log your daily exercises, set your fitness goals, and chart your progress, week by week. If you have heart trouble, exercise, diet and lifestyle are keys to recovery. If you don't have heart trouble, they are the best means to avoid it.

The grid on pages 36 to 39 provides 13 fitness measurements and tests and space for one more.

Who is going to do a dozen fitness checks every week? No one. The point is to choose the goals you want to achieve and are most suitable for you. Follow the KISS principle: Keep It Simple, Simon. You might set only three of four fitness goals to check each week (or even every other week). There are, for example, four different measures to determine your ideal "fat free" body. You will likely use only one to set your goal. I use the waist-to-hip ratio. Read this section first. Then consult your doctor or exercise physiologist before deciding which fitness goals to pursue (or even maintain), especially if you are in cardiac rehab.

The 13 fitness measurements and tests on the weekly grids are: weight; body fat; body mass index; waist-hip ratio; resting heart rate (pulse); heart recovery rate; reserve heart function; push-ups; elbow touch-test; toe touch test; grip strength; systolic blood pressure; diastolic blood pressure. We'll talk about each of this in this section of the book.

In addition to weekly checks, there are also a number of periodical checks that might be performed quarterly, semi-annually or annually. These will likely be conducted or arranged for by your doctor or exercise physiologist. Ask about how often these checks should be made. These are tests for your maximal heart rate, your training heart rate, maximal oxygen consumption, and

blood tests for cholesterol and triglyceride levels. Each of these will also be discussed in this section.

Rating the heart

Various measurements of the rates at which your heart beats (essentially your pulse) are used to not only indicate how intensely you should exercise. They also provide another way to measure your physical fitness and help chart your progress.

There are five different heart rate measurements commonly used by physicians and exercise physiologists. They are maximal heart rate; training (or target) heart rate; resting heart rate; recovery heart rate; and heart rate reserve.

Your heart rate is counted in beats per minute. You can measure that by taking your pulse. The usual way is to use two fingers to count your pulse at the underside of your wrist for 10 second and multiply by six to get a one-minute count. This is considered better than taking your pulse for a full 60 second, since after exercising, when your pulse should be rapidly slowing, you might get a misleading reading.

The only recommendation I will make (everything else is simply summarizing of advice of the best experts I could find) is this: buy a wristwatch type of heart monitor. I think they are much better than taking your pulse with your fingers. You can get a reliable one for about \$30. For about \$50 or so you could also get one that will measure not only your heart beat, but also tell time and date like a regular watch and reputedly count the number of calories you consume each day.

Maximal heart rate is the fastest rate your heart can pump for any sustained period of time. It is less than the *maximum* rate, which can be sustained for only a minute or two, as we have already noted. Exercise will not increase your maximal heart rate: it is what it is. It will slowly decline with age. Exercise can improve your aerobic fitness not by making your heart pump faster but by making it pump more blood and oxygen with each stroke. If, for example, the amount of blood and oxygen pumped by your heart limits your walking speed to say, three miles per hour, a sustained exercise program might, over time, increase this to 3.5 or four mph.

The only accurate way to determine your maximal heart rate is with a physical stress test conducted by a health professional, in which an electrocardiogram monitors your heart rate. This is usually done on a slightly inclined treadmill that operates in stages of increasingly faster speed. Since your maximal heart rate declines only very slowly with age, there is no need to check it check it often. There is a plethora of formulas used to estimate your maximum

heart rate without the need of a stress test, but none are considered very precise.

Heart training range is a function of your maximal heart rate, typically a range of 50 to as much as 85 percent of your maximal rate. Thus if your maximal heart rate is 180, your heart training rate would be 90 to roughly 150 beats per minute. This indicates that to get any real aerobic benefit, your heart should work at a minimum rate of 90 beats per minute when you exercise, but no more than 150. But don't try that upper level if you are just starting on an exercise program. "After six months or more of regular exercise, you may be able to exercise comfortably at up to 85 percent of your maximal heart rate," says the American Heart Association. But it adds, "You don't need to exercise that hard to stay in shape."

Short of taking a stress test, the most widely used, and simplest formula to calculate your maximal heart rate (and thus your training heart rate) is 220 minus your age for men, and 226 minus age for women. For a 50-year-old male, maximal heart rate would be 170 and training rate would be 85 to 146 bpm. There are many other such formulas. Some incorporate your resting heart rate and your heart rate reserve into the equation.

All such formulas are subject to error. University of New Mexico exercise physiologists Robert A. Robergs and Roberto Landwehr reported on a study of 43 such formulas in the May, 2002 issue of *The Journal of Exercise Physiology*. They concluded that none of them were very accurate, but the formula that came closest is $HR=205.8 - (0.65 \times \text{age})$. Although this too was subject to significant error, it was considered acceptable in determining exercise training heart rate ranges. If you accept the findings of this study, then in lieu of a stress test to determine your maximal heart rate and training range, you might wish to use this formula rather than the more simple 220 or 226 minus age. With any calculator, it will take you less than a minute.

It is very important to know an acceptably accurate MRH and heart training range, and this might be as good as you can do without a stress test.

Resting heart rate. The rate at which your heart beats when you are at rest is an approximate indicator of your physical fitness, a possible tool to help measure your fitness improvement and, as mentioned, it is used in some formulas in determining a heart training range. Generally, the lower your resting heart rate the more fit you are. While the resting heart rate is partly determined by genetics, the average for men ranges from 70 to 76 bpm, and for women, 74 to 78 bpm, according to a British web site, Netfit (www.netfit.co.uk). Dr. Roger Banister, the first man to run the four-minute mile, had a resting heart rate of 40 beats per minute. Lance Armstrong, the

champion cyclist, has a resting heart rate of 32 bpm. An excellent rate for men is in a range of 56 to 63 bpm, according to Netfit, and 61 to 65 for women. "Regular exercise can cause as much as a 20 to 30 bpm reduction on resting heart rate," according to Scott O. Roberts, assistant professor, Department of Physical Education and Exercise Physiology, California State University (*American Fitness*, July/August 2002).

"The best time to find out your resting heart rate is in the morning, after a good night's sleep, and before you get out of bed," advises the American Heart Association.

Even horses are now tested for resting heart rate, with a special horse heart monitor.

Recovery heart rate is the rate at which your heart rate reduces after exercising, and different ways of measuring this are used. In one example, if you exercise at 150 bpm for 30 minutes, and two minutes later the rate has reduced to 90, the recovery heart rate is 60

Dr. Gabe Mirkin, author of *The Healthy Heart Miracle* and nine other fitness and diet books, argues that the recovery heart rate is a better measure of fitness and a better way to track your progress than the resting heart rate. He advocates exercising as hard as possible for 10 minutes followed immediately by your pulse check and a second check 60 seconds later. "If your heart does not slow at least 30 bpm, you are in poor shape," says Dr. Gabe. "If it slows more than 50 you are in excellent shape."

Such an arduous test will not appeal to everyone, and no one with any heart trouble should try it, Dr. Mirkin warns. Alinda Perrine, a Sacramento, California trainer and president of Heart Zones IP, offers a less challenging testing. Wear a heart monitor while exercising at a constant pace on your favourite workout: walk, jog, cycle, treadmill, or other. Measure your heart rate when you stop and two minutes later. The difference is a measure of your recovery heart rate.

If you do checks of your recovery heart rate as a means of checking progress, you might wish to do it about once a month

Heart rate reserve is simply the difference between your resting heart rate and your maximal heart rate. The amount of heart rate reserve used is sometimes taken as a measurement of the intensity of an exercise. If your resting heart rate is 60 and your maximal heart rate is 150, your reserve heart rate is 90. If you exercise at 105 bpm, you would be using half your reserve heart rate. As exercise reduces your resting heart rate, your heart rate reserve will increase.

You might wish to discuss with your fitness trainer, which heart rate to use to track your fitness progress: resting heart rate, recovery heart rate, or reserve heart function. I use the resting heart rate, even though improvement of this is gradual.

Piping the oxygen

Aerobic fitness refers to the ability of your body to consume oxygen, the fuel that helps fire your furnace. Nothing is more important to your overall physical fitness than the capacity of your lungs, heart and arteries to deliver oxygen to your muscles, and the utilization of the oxygen by the muscles in producing energy. According to Dr. Kenneth H. Cooper, “aerobic capacity is the best index of overall physical fitness.”

The capacity of the body to use oxygen is measured in millimetres per kilogram of total body weight, and in the shorthand of exercise physiologists is expressed as VO_2 Max. If exercise (and perhaps other lifestyle choices) increases your aerobic fitness, this will be directly reflected by an increase in your VO_2 Max.

Your VO_2 Max can be either measured directly, or calculated indirectly.

Direct measurement is performed with a stress test. As you work on a treadmill or stationary bicycle at your maximum sustained capacity, you breathe into an apparatus that collects your expelled gas to analyze the amount of oxygen you have consumed. VO_2 Max can be indirectly measured by the type of stress test conducted by a cardiologist, who is more directly concerned with measuring the health of your heart.

There are a number of do-it-yourself methods to calculate your VO_2 Max. Dr. Kavanagh describes one in his *The Healthy Heart Program* (see selected resources). The book provides charts and tables from which you can calculate your maximal oxygen consumption, based on your pulse rate after exercising at 75 percent of the estimated average maximum rate of exertion for your age and sex.

Perhaps the simplest do-it-yourself method, developed by exercise physiologist Dr. Bruno Balke, requires you to run and walk as far as you can for 15 minutes. Measure the distance in metres and divide by 15 to give your speed in metres per minute. Your maximal oxygen consumption is then calculated by the following formula: $(\text{speed} - 133 \times 0.172 + 33 = VO_2 \text{ Max. in ml/kg.min})$. If, for example, you ran 2,000 metres (or two kilometres) in 15 minutes, your VO_2 Max., based on this calculation, would be 56.2. Don't try this test without first getting clearance from your doctor: running and walking as hard as you can for 15 minutes could be dangerous for people over 30, overweight,

out of condition, or suffering any health problems. In any event, be sure to warm up before the test and cool down after.

Ideal maximal oxygen consumption capacities, based on age and sex (adapted from *The Canadian Standardized Test for Fitness*) are as follows:

Ideal maximal oxygen consumption (ml/kg.min)

Age	Male	Female
17-19	55 to 63	40 to 43
20-29	51 to 57	38 to 40
40-49	40 to 43	31 to 35
50-59	36 to 40	27 to 32
60 to 65	32 to 35	25 to 28

VO_2 Max. is just one of the measures you can choose to track your fitness progress from the weekly fitness checks on pages 36 to 39. You will likely need to use a do-it-yourself test to check your VO_2 Max. weekly, or at least frequently. If you choose to use this measurement, select your appropriate goal from the table above and enter it on page 36.

The aging heart pump

The heart is a bit like a fuel tank, and the fuel it holds is blood. When we are at rest, each stroke of a healthy heart pumps out, on average, about 67 percent of the fuel in the tank. That normally doesn't change as we get older. What does change, is the amount pumped out when we are vigorously exercising. When exercising, a healthy, young heart pumps out nearly 90 percent of the blood in the tank with each stroke, while an older heart might pump perhaps 71 percent.

The older heart, however, has a trick, explains Dr. Ed Lakatta, professor of medicine at John Hopkins Bayview Medical Centre at Baltimore, a leading world expert in the field of cardiovascular diseases in the elderly. During exercise, the older heart stretches out to a larger size, “essentially like having a bigger fuel tank,” says Dr. Lakatta (<http://www.healthandage.com/how-good-a-pump-is-your-older-heart-part-iii>). So while we older guys might not empty our hearts with each stroke quite as much as younger folk, the output volume can still be comparable.

In my case, it's a little more restricted. A scar tissue left on my heart from my cardiac arrest limits my heart's output when at rest to just 45 percent of what's in the tank, compared with the normal 67 percent. Yet when exercis-

ing, it seems to deliver a good load each time. Perhaps an indication of what exercise can do to help overcome a handicap.

In any event, I like to think that we old geezers have a big heart.

Yet, there is a downside to the old heart trick. “The older heart adapts,” writes Dr. Lakatta, “but pays because the pressure within the dilated heart cavity between heartbeats becomes increased during exercise compared to that in a smaller, younger heart.”

Cholesterol and triglycerides

The amount of cholesterol in your blood in Canada is measured in terms of millimoles per litre (mmol/L), while in the United States it is measured in milligrams per decilitre (mg/dl). That can make it frustrating when you get back the results of a blood test and you seek to compare them with the recommendations in a book such as *Controlling Cholesterol* by Dr. Kenneth H. Cooper, or the University of California’s *Wellness Encyclopedia*. End the frustration by multiplying mmol/L by 38.5 to convert to an approximate equivalent reading in mg/dl.

The Heart and Stroke Foundation of Ontario recommends that total cholesterol levels should be no more than 4.6 mmol/L or 180 mg/dl for people under 30, and no more than 5.2 mmol/L or 200 mg/dl for people over 30. Dr. Cooper recommends 180 to 190 mg/dl and adds that if all Americans fell within this range “our rate of coronary heart disease would probably be reduced by 30 to 50 percent.”

But the total cholesterol count is not the whole story.

Cholesterol is a white, waxy-fat like substance that is essential to life. It is carried through the blood stream by low-density lipoproteins (LDL) and by high-density lipoproteins (HDL). The LDL apparently carries a bigger load of cholesterol than the HDL. If you have too much cholesterol in your blood, some of the excess carried by the LDL may stick to the arterial walls of your arteries, forming the plaque, which causes atherosclerosis. HDL, on the other hand, is helpful because it tends to pick up some of the excess cholesterol deposited by the LDL, returning it to the liver where it is either re-processed or excreted. In effect, HDL seems to help clean out the pipes. And exercise appears to help the cause by increasing the amount of “good” HDL in your blood relative to the “bad” LDL.

The College of Family Physicians of Canada (<http://www.cfpc.ca>) offers these recommendations on LDL and HDL levels:

- An LDL cholesterol level of less than 3.0 mmol/L is best.

- An HDL above 1.0 mmol/L is best.
- If your risk is low, your LDL cholesterol should be less than 5.0 mmol/L and total cholesterol HDL-C ratio should be less than 6.0.
- If your risk is moderate, your LDL cholesterol should be less than 3.5 mmol/L and total cholesterol HDL-C ratio should be less than 5.
- If your risk is high, your LDL cholesterol should be less than 2.0 mmol/L and total cholesterol HDL-C ratio should be less than 4.0.
- An HDL cholesterol level of less than 1.0 mmol/L means you’re at higher risk for heart disease.
- If you have diabetes, your LDL should be less than 2.0 mmol/L.
- If you’ve already had a heart attack your LDL needs to be less than 2.0 mmol/L.

Diet is also very important. Here is what the Heart and Stroke Foundation recommends on that score:

“Reduce fat intake to 20 to 30 percent of daily calories. Choose healthy fats such as polyunsaturated and monounsaturated, found mainly in vegetables, oils, nuts and fish. Limit your intake of saturated fat found mainly in red meat and high-fat dairy products. Avoid trans fats found in foods made with shortening or partially hydrogenated vegetable oil, hard margarines, fast foods and many pre-made foods... Eat more vegetables, fruit and whole grains... Use lower-fat cooking methods such as baking, broiling or steaming. Avoid fried food.”

Triglycerides are another type of fat found in blood. Excess weight and alcohol consumption and diabetes are associated with high levels of triglycerides.

Cholesterol and triglyceride levels are usually measured at the same time, an aspect of regular medical checkups.

Fighting the fat

Most of us are overweight, if not obese. We carry around too much fat. It is a national health concern. Bookshelves groan with recipes that tend to make us fat, cheek by jowl with books that tell us how to lose it.

Not surprisingly, many people start an exercise program to lose weight, at least to improve their appearances, if not their health. If your goal is to lose weight, you’ll keep a close eye on the scales. Even if your weight is ideal, you’ll still want to check it regularly to make sure it stays that way.

In this section we’ll look at ways to measure excess fat and determine your ideal weight.

Body fat. “Ideally, the average sedentary male should not carry more than 14-18 percent body fat and a female no more than 18-22 percent,” according to the Canadian Standardized Test for Fitness. Qualified fitness appraisers can measure your body fat. Or you can have a friend do a few skin pinches, using fingers instead of calipers that cost a few hundred dollars.

For a do-it-yourself test of body fat, sit relaxed, either stripped to the waist or in light attire. The two areas to be tested are the back of the forearm and the side of your tummy, about where the “love handles” are usually found.

Have a friend help you with the forearm test, because it’s a bit awkward to reach around to your own test area. Sit relaxed. Bend your elbow at 90 degrees, and tighten your muscles at the back of the forearm. Have your friend pinch the skin on the back of your forearm. On men, pinch one-inch below the shoulder, and on women, pinch midway between the shoulder and elbow.

To test the love handles, pinch one-quarter of an inch above the top of your hip (the iliac crest).

Here’s how to gauge the results, measured by the thickness of skin and fat pinched between finger and thumb: less than 1/4 inch, excellent; 1/4 to 1/2 inch, good; 1/2 to 3/4 inch fair; more than 3/4 inch, poor.

Waist to hip ratio. As far as health risks are concerned, a big belly is generally considered more dangerous than a big bum. If you must carry a little excess fat, it’s safer to carry it below the belt buckle. For that reason, the waist to hip ratio is an important measurement, and very simple to do.

Measure around your hips at the point where your posterior sticks out the most. Measure around your waist at the point of your belly button. Divide the hip measurement by your waist measurement. If you measure 37 inches around the hips and 41 inches around the waist, your ratio is approximately 1.1. For men, the ratio should be one to one; you should measure no more around the waist than around the hips. If the example used here is for a man, he should lose four-inches around his beer belly.

For a woman, the waist size should be no more than 80 percent of the hip size.

If you prefer this to the pinch test (as I do), measure your hip size, and for a man, put that number as your goal in the weekly fitness table; for a woman, put down 80 percent of your hip measure.

Weight. You can find an estimate of your ideal weight from published tables based on gender, height and whether your body frame is small, medium, or large. The best known such table was published by the Metropolitan Life Insurance Company in 1943 and revised in 1983. You can find this table at <http://www.hall.md/ideal-weight/met.htm>

You can very approximately calculate an ideal weight from different, simple formulas. Here’s one: for men, multiply the square of your height, in inches, by 0.33; for women, multiply by 0.3. According to this, the ideal weight for a six-foot (72-inch) man would be $72 \times 72 \times 0.33 = 171$ pounds. There are, however, many factors that such formulas fail to take into account.

Body mass index is a widely used way to indicate whether you are over- or underweight. While it does not actually measure body fat, it is considered a generally useful if not precise guide. Using inches and pounds, it is calculated as your weight multiplied by 703 and divided by the square of your height. For a six-foot man, weighing 180 pounds, the BMI would be 180×703 divided by $72 \times 72 = 24.4$. But you don’t have to do all that arithmetic: there are many web sites that will do it for you when you simply enter your weight and height. A reputable site is the U.S. National Heart, Lung and Blood Institute, <http://www.nhlbisupport.com/bmi>

Health Canada says a normal BMI is 18.5 to 24.9. Anything less than 18.5 is considered underweight; 25 to 29.9 is classed as overweight, and anything over 30 is classed as obese.

If you choose to use the BMI index to track your ideal weight you could pick 21 as your target—that’s approximately the middle of Health Canada’s “normal” range—and enter that as your goal on page 36. Then stand on the scales once a week or every other week, and do the arithmetic to get your BMI, or have a web site calculate it for you.

Diabetes, an escalating epidemic

One hundred thousand Canadians will develop diabetes in 2010. It will claim 700 lives and debilitate thousands. The overwhelming majority will be overweight, sedentary adults.

Worldwide, diabetes claims roughly the same number of lives as HIV/AIDS, about 3.8 million each year. The International Diabetes Federation says that it is “fast becoming the epidemic of the 21st century.” It is the fourth leading cause of death.

In few countries does the epidemic rage more than in Canada. In a recent survey of 16 countries, only the United States, Denmark and Austria had higher rates of diabetes mortality. Canada’s death rate was an estimated 19 per 100,000 population in 2005, and rising. In Japan, the death rate from diabetes is 5 in 100,000—one quarter the Canadian mortality rate.

Some two million Canadians now have diabetes. That is expected to jump 50 percent with a decade; three million Canadians with diabetes by 2020. Many Canadians now have diabetes, but don’t yet know it.

Ninety percent of diabetics have type 2 diabetes, defined by the Canadian Diabetes Association as “a disease in which your pancreas does not produce enough insulin, or your body does not properly use the insulin it makes.”

“The number of people with type 2 diabetes is increasing dramatically because of Canada’s aging population, rising obesity rates, increasing sedentary lifestyle, and higher risk for diabetes for Aboriginal people and new Canadians,” says a report from the Conference board of Canada, www.healthandage.org/tools/diab/indexdiab.jsp

Diabetes is a chronic disease, often debilitating, and sometimes fatal. Long-term, it can lead to blindness, loss of feeling in the limbs, and kidney and cardiovascular disease.

If obesity and inadequate physical activity lead to diabetes, then exercise and diet should be key factors in prevention. Even those at high risk of developing diabetes can dramatically improve their odds of avoiding the disease. One four-year study of 500 high-risk people with impaired glucose tolerance indicated that 30 minutes of daily exercise combined with a proper diet, can reduce the risk of diabetes by 58 percent. The study was published in *The New England Journal of Medicine*, <http://content.nejm.org/cgi/content/short/344/18/1343>

Sugar (glucose) does not cause diabetes, but diabetes is characterized by high levels of glucose. As with cholesterol, your blood sugar level is measured in millimoles, in this case millimoles of glucose per litre of blood.. A normal fasting blood glucose level is 4 to 6 mmol/L. A reading of 7 mmol/L or higher indicates prediabetes, “blood glucose levels that are higher than normal, but not yet high enough to be diagnosed as type 2 diabetes,” according to the Canadian Diabetes Association. “Although not everyone with prediabetes will develop type 2 diabetes, many people will.”

I am one of the prediabetes people. If my weight goes up, so does my blood sugar level. When my weight is kept where it should be, my blood sugar level is also where it should be. There is not the slightest doubt in my mind that if I fail to exercise and diet I will have not just prediabetes, but diabetes. There must be thousands of other Canadians in the same position as I: people who can probably avoid, or at least defer diabetes, if they exercise regularly and watch their diets.

If you’d like to know your particular risk of developing type 2 diabetes, there are online calculators that will give you at least an indication. Go <http://www.healthandage.org/tools/diab/indexdiab.jsp> and enter the requested information. The response is intended only as a guideline. This test is said

to be based on information from the U.S. Centre for Disease Control and Prevention.

If you have periodic medical checkups, your blood tests will include your blood sugar readings. If you are prediabetic or diabetic you need to check often. How often varies. Ask your doctor: it may be several times a day, once a day, two or three times a week. Your daily exercise log, starting on page 40, provides space to record blood sugar levels, if these should be checked more often than your periodic medical checkups.

Strength and flexibility

Unless you plan to compete in wrestling, weight lifting, or the like, you will probably be more interested in muscular endurance and flexibility than muscular strength. Still, no one wants to be a 90-pound weakling, and some strength building, or at least maintenance, should be part of a complete program. Adequate strength and endurance are also of value in avoiding injury during sports or exercises, and in preventing such ailments as chronic back pain.

Muscular strength is defined by Fitness Canada as “the maximum tension or force a muscle can exert when contracted to its maximum capacity,” while endurance “relates to the ability of a muscle group to perform repeated contractions against a light resistance over a period of time.”

In the *Canadian Standardized Test for Fitness*, muscular test is measured by testing your grip on a strength dynamometer. If you take this test, the results will include an analysis of your strength, and if you wish to improve it, you should discuss appropriate exercises with your instructor.

You can test your muscular endurance yourself by seeing how many push-ups you can do in one minute.

Easiest push-ups are the box type: hands and knees on the floor in the position you assume when you piggyback a small child around the living room. Bend your elbows until your nose touches the floor, leaving your rear-end sticking up in the air, then push up. A bit more difficult are the half push-ups. Lie face down with your hands flat on the floor beside your shoulders, then push up, bending your legs at the knees. Most difficult are the full push-ups, where you keep your legs stiff and straight, and only the hands and toes touch the floor in the up position. Be cautious about trying the full push-ups unless your muscles are in quite good shape.

Based on fitness tests conducted at the central YMCA in London, England, and depending on your age and gender, you will rate “good” to “excellent” if you manage to complete the following number of half push-ups in 60 seconds.

Number of half push-ups in 60 seconds for good to excellent muscular endurance rating

<u>Age</u>	<u>Male</u>	<u>Female</u>
20	35-45	35-45
21-30	47-65	40-50
31-40	42-60	35-45
41-50	32-50	25-35
51-60	27-45	20-30
61-70	22-40	15-25

If you want to use this test to track your muscular endurance, set your goal based on the above table and enter a figure from the range for your age and gender. Depending how far you want to build your muscle endurance, a figure in the middle of your range might be ideal. Thus, if you're a 55-year-old woman, you might choose 25 half push-ups in 60 seconds as your muscle endurance goal.

Flexibility. Toe-touching and elbow touching are two simple, do-it-yourself tests for flexibility.

To test the flexibility of your lower body, sit on the floor, legs together, stretched out straight in front of you, toes pointing to the ceiling. See how close you can come to touching your toes with your fingers and without bending your legs. In the *Canadian Standardized Test for Fitness*, this test is performed with a “flexometer,” but all you really need is a tape rule and a good friend to measure the gap between your fingertips and toes. Or you can just guess at the gap yourself. It’s difficult to set standards for this, since some people have short legs and long arms, which makes it easy; while others have short arms and long legs, which makes it difficult (at least, that’s my excuse). If you get really very good at this, you might try spreading your legs, then see if you can touch the floor with your forehead.

To test shoulder flexibility, place your hands on your hips with your index fingers on your hipbones. Now see if your elbows can touch behind your back. As your shoulders become more flexible, the gap between the elbows should shorten.

Many exercise videotapes and DVDs include muscle strengthening and flexibility exercises. “Heart Beat: Healthy Heart Program,” produced by St. Paul’s Hospital, Vancouver, is widely recommended by exercise physiologists at cardiac rehabilitation centres. See Helpful Resources.

Helpful resources

If you attempted to read all the popular books (never mind the technical stuff) about physical fitness, you wouldn’t have time to exercise—or do anything else. And you could drown in the ocean of material on the World Wide Web. Do a Google search for “physical fitness” and, at the latest count, you’d get more than 5.7 million hits. But I found the books and other material described here particularly useful. Most of these are likely available at your local library. Others can be ordered from your bookseller or ordered online, or read online and downloaded.

Balboa, Deena and David. *Walk for Life: The Lifetime Walking Program for a Healthy Body and Mind*. New York: Putnam, 1990. *If you thought you knew how to walk, you might want to look at this book. Too many fitness walkers, say the authors, go at it with the grim determination of joggers, “wildly and counter-productively pumping their arms.” They show you how to make it more natural, graceful, relaxing, and pleasurable—and also how to walk faster than the tensed-up military marchers.*

Cooper, Kenneth H. *Aerobics*. New York: M. Evans, 1968; and *The New Aerobics*. New York: Bantam Books, 1970. *The godfather of aerobic exercises and the patron saint of runners and joggers has sold more than two million copies of his aerobic books. Full of charts and tables to show how hard you should exercise. “You achieve a greater training effect if you put more effort into your exercises,” he writes. But many exercise physiologists and medical authorities now believe you don’t have to exercise quite as hard as Dr. Cooper recommends in order to be physically fit. And many former runners and joggers, with crippled ankles and knees, have turned to brisk walking instead.*

——— *Controlling Cholesterol*. New York: Bantam books, 1988. *With this book, you don’t have to be a medical doctor to understand how cholesterol can affect your heart, and how to deal with it. Includes a “controlling cholesterol diet” with lots of recipes.*

Dietitians of Canada. *Cook Great Food*. Toronto: Robert Rose, 2001. *Can-*

da's dieticians offer 450 recipes for nutritionally sound meals that are part of a well-balanced diet and also taste great.

Fitness Canada and the Canadian Association of Sports Scientists (now the Canadian Society for Exercise Physiology). Ottawa: Fitness Canada, 1990. No longer in print, this package of materials might still be found in some libraries. It has been replaced by a number of books published by the CSEP, including "CSEP Certified Exercise Physiologist Certification Guide, available at www.csep.ca." The 1990 Standardized test is a four-part package consisting of an operations manual, an interpretation and counseling manual, an assessment report, and a cassette tape, intended for use by professional "fitness appraisers." But anyone dedicated enough to plow through some rather turgid prose can benefit from the information it offers.

Johnson, Harry J. *Creative Walking for Physical Fitness*. New York: Grosset & Dunlap, 1970. The medical director of New York's Life Extension Institute advocates walking as the best—and most enjoyable—of all exercises in this very slim book. He lays out a 10-week program to get you in shape for walks of 15 to 20 miles.

Kavanagh, Terence. *The Healthy Heart Program*, 1985; and *Take Heart: A proven step-by-step program to improve your heart's health*. Third edition. Toronto: Key Porter Books, 2004. In 1973, seven men from Toronto made medical history: they were the first heart patients to enter—and successfully complete—the 77th running of the Boston Marathon. Dr. Kavanagh, founder of the Toronto Rehabilitation Institute, has helped thousands of heart attack survivors over a 40-year period with his controlled walking and jogging program that he calls LSD—long, slow distance. Whether your goal is to recover from a heart attack, or to avoid a heart attack, the latest edition of Dr. Kavanagh's work is an essential reference.

Lindsay, Anne. *The Lighthearted Cookbook: Recipes for Healthy Heart Cooking*. Toronto: Key Porter Books. More than 100 heart-healthy ways to enjoy your diet.

Ornish, Dean. *Dr. Dean Ornish's Program for Reversing Heart Disease*. New York: Random House, 1990. And *Eat More, Weigh Less: Dr. Dean Ornish's Advantage Ten Program for Losing Weight Safely while Eating Abundantly*. New York: Quill, 2001. When I was released from hospital in 1989, the doc

tors told me that exercise and diet would never clean out the plaque from my arteries that had caused my heart attack and cardiac arrest. But Ornish's 1990 book offered dramatic evidence, based on 14 years of controlled experiments, that exercise, diet and stress management can, indeed, clean out the pipes and reverse heart disease. Dr. Ornish's program calls for moderate exercise, but differs from conventional medical treatment of heart disease in two major respects: diet and stress management.

To reverse heart disease, he prescribes a very low-fat, strict vegetarian diet. To prevent heart disease, he prescribes a less stringent diet. Dietitians point out that by excluding such foods as fish, meat, dairy products and nuts, the Ornish diet also excludes some vitamins, minerals and other nutrients needed for a balanced diet. Ornish says, in effect, that if your pipes need cleaning out, you should get the missing stuff from pills and other supplements.

The most arresting aspect of Dr. Ornish's work, however, documents how psychological stress—emotional stress, perceived isolation, lack of social support, hostility, cynicism, low self-esteem—is a primary cause of heart disease. He prescribes a total lifestyle program involving physical, emotional and spiritual choices.

Widely considered a landmark, Dean's 1990 book was one of my first guides when I began to study how to avoid another heart attack.

Pauling, Linus. *How to Live Longer and Feel Better*. New York: W.H. Freeman, 1986. Scientist, crystallographer, molecular biologist, medical researcher, peace activist, and two-time Nobel Prize winner, Linus Pauling's claims for the benefits of vitamin met with derision by the medical community when his book, *Vitamin C and the Common Cold* was published in 1979. No one questions the benefits of vitamin C today. Pauling was the best testimony of his theories: up to age 90, he was still working hard and as active as many men half his age. Well worth reading.

Stamford, Bryant A., and Porter Shimer. *Fitness Without Exercise: The proven strategy for achieving maximum health with minimum effort*. New York: Warner Books, 1990. You can keep fit without "exercise" if you just walk briskly four or five hours a week, or other otherwise burn up 2,000 calories in "physical activity," the authors claim. They define exercise as suffering pain to gain fitness; physical activity as an enjoyable part of an overall healthy life style. Not really so much an attack against exercise as an attack against excessive aerobic exercise. But whether you call it exercise or activity, the au

thors confirm that fitness still requires a minimum amount of physical exertion. Some sound advice on keeping fit without over-doing it.

University of California, Berkeley, editors of the Wellness Letter. *The Wellness Encyclopedia*. Boston. Houghton Mifflin Company, 1991; and *The New Wellness Encyclopedia*. New York: Mariner Books, 1995. Billed as “*The Comprehensive Family Resource for Safeguarding Health and Preventing Illness*,” the Wellness Encyclopedia weighed in with 542 pages of information, while the New Wellness Encyclopedia adds an additional 80 pages. If you’re looking for an all-purpose, family medical reference for your bookshelves, you won’t go wrong with this one.

ON LINE

Aging of Your Heart and Blood Vessels. http://www.healthandage.org/html/res/aging_of_you/content/3.htm

Eighteen outstanding articles provide all the technical information you are likely to want about your cardiovascular system, how it changes as you age, and what you can do about it. Topics include “Are you fit for your age?” “How good a pump is your aging heart?” “You can prevent and roll-back atherosclerosis.” There is even a layman’s explanation for “The role of neurotransmitters and endothelial cells substrates in the regulation of blood pressure.” Written for laymen by Dr. Ed Lakatta, a world-renowned expert in the field of cardiovascular diseases in the elderly. Dr. Lakatta is professor of medicine and visiting physician at Johns Hopkins Bayview Medical Center, Baltimore, MD; and adjunct professor of physiology, University of Maryland School of Medicine.

American College of Sports Medicine and American Heart Association. *Physical activity guidelines for healthy adults under age 65, and for adults over 65 and those with chronic health conditions.* <http://www.americanheart.org/fitness>

American Heart Association offers a free, 12-week online nutrition and exercise program, for women, “Better Health with Better U.” Each week focuses on a different area with step-by-step guidance. Includes an online journal to record your progress and a downloadable coaching tool <http://www.goredforwomen.org/BetterU/index.aspx>

Cardiac Care Network of Ontario: <http://www.ccn.on.ca> *Information for patients, physicians and health-care planners and managers.*

Heart and Stroke Foundation of Canada: <http://www.heartandstroke.on.ca> *Information and advice about your heart and its care, including recipes.*

The College of Family Physicians of Canada: <http://www.cfpc.ca> *This is a web site not just for physicians but also for their patients. The site’s “Patient education program” offers some 90 illustrated, patient-friendly papers on topics ranging from Acne in Teens to Activity After a Heart Attack, Nose-bleeds, and Weight Control.*

Netfit <http://www.netfit.co.uk> *A British web site that claims to be “Your definitive guide to health and fitness,” looks like one of the best. It offers clear information on such things as blood pressure, lung capacity, body fat and flexibility; offers a number of home exercises; and provides fitness tips, such as: “The only thing that is worse than not exercising, is to actually spend time doing your exercises incorrectly.”*

Weight Loss Central, <http://www.weightlosscentral.org> *One of several web sites that will calculate the number of calories you burn when exercising, saving you the arithmetic. You choose from a list of activities, enter your weight and activity time, and the answer pops up.*

VIDEO RECORDING

Heart Centre, St. Paul’s Hospital, Vancouver, B.C. *Heart Beat: Healthy Heart Program*, available on videotape or DVD disc. *There are probably hundreds of exercise tapes and DVDs. With this one, you are led through 40 minutes of strength and flexibility exercises by three pleasant female trainers. It is recommended by exercise physiologists at cardiac rehab centres, and is the one I use. To purchase your copy, contact the cardiac rehab centre at your hospital, or the Heart Centre at St. Paul’s Hospital, phone 604.806.8591.*