

FINDING YOUR OWN FOUNTAIN *of* YOUTH

*THE ESSENTIAL
GUIDE TO
MAXIMIZING
**HEALTH,
WELLNESS,
FITNESS &
LONGEVITY***

ANDREW SIEGEL, M.D.



FINDING YOUR OWN FOUNTAIN OF YOUTH is the essential guide to maximizing your health, wellness, fitness and longevity. It offers a pragmatic and accessible approach to optimizing your quality and quantity of life. Such key measures as an active existence and a positive spirit, weight management, physical fitness, preventive health care, intelligent lifestyle choices, and mental and social engagement are all comprehensively explored as a means of achieving these goals. Included is an illuminating discussion of the aging process from biological, clinical, and psychological perspectives and the extraordinary ways in which diet, lifestyle, and exercise can contribute to your vitality and quality longevity. The effects of time as well as environmental exposure, poor habits, and genetics are examined and options as to how to mitigate such factors are provided.

Dr. Siegel has put great effort into practicing what he preaches and acting as a role model for his family, friends and patients. While he recognizes that no one is capable of stopping the time clock, he provides simple and commonsense measures that can certainly slow down the tick of the clock. These will help enable the glow of youth to shimmer on you for as long as is humanly possible.

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USA

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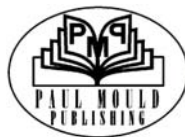
The Essential Guide to Maximizing Health,
Wellness, Fitness and Longevity

Andrew Siegel, M.D.

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*In loving memory of my mother, Ruth and mother-in-law,
Esther—two beautiful and caring women whose years on
this planet were far too brief.*

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DISCLAIMER: This publication contains the opinion, ideas, and biases of the author. There is no intent that any of the information provided should be construed as medical advice or professional medical services. Before adopting any of the recommendations made in the book, it is imperative that you should consult with your own health care provider. The author and publisher disclaim any and all responsibility for any liability or loss incurred as a direct or indirect consequence of the use of any of the information provided.

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Thank you first and foremost to Leslie, my faithful partner and editor. She is a “low maintenance” wife who has always supported my sometimes quixotic notions, has generously allowed me ample amounts of personal time to pursue my desires and many activities (so my envious friends tell me!), and has helped me translate medical-speak into plain English and to convert my tangential rambling into coherent prose. Her years of experience as an editor at Prentice Hall and a publishing executive at Random House have proven invaluable to me. She has been a loving, stalwart fixture in my existence in a world too often marked by randomness, chaos, and lunacy.

Thank you to my patients who have opened up their lives and hearts to me, particularly my *chronologically* older but *physiologically* young patients. They have shared with me their secrets to a long and healthy life, and have given me a wealth of information that is not to be found in any medical text book or journal. One of the most enjoyable aspects of my medical practice is the meaningful relationships that I have developed with my patients. Engaging their trust and respect through our interactions is one of the most satisfying aspects of being a physician.

This book could never have taken shape had I not first done due diligence in various areas of study. I needed to properly educate myself on the medical, physiological, nutritional, and psychological components of maintaining youthfulness and here I found several resources to be particularly helpful: my gratitude goes out to Dr. Henry S. Lodge and Chris Crowley, authors of *Younger Next Year: A Guide to Living Like 50 Until You’re 80 and Beyond*. This specialist in internal medicine and his 70-year-old patient

co-wrote this interesting read that gives insight into how we can literally turn back the biological clock. I have recommended this book to my friends and to many of my patients.

In my quest for knowledge on exercise physiology, I was fortunate to chance upon an extraordinary internet web site thanks to Dr. Stephen Seiler, author of *Masters Athlete Physiology and Performance* (a.k.a., the *MAPP*). He is an endurance sport enthusiast and holds a doctorate in exercise physiology, with a strong interest in the physiology of human performance and exercise as preventive medicine. Dr. Seiler's web site is comprehensive, easily readable, funny and extremely informative. He has an extraordinary gift for simplifying the complex, particularly with the use of analogies.

I was lucky to discover a copy of Ray Kybartas' book *Fitness is Religion—Keep the Faith* while browsing in my local library. I found this book *after* I had written my exercise chapter. Never have I come across a book whose message and sentiments so mirrored *everything* I wanted to convey in my discussion of exercise and what it means to me. Ray Kybartas is a personal trainer to the stars, whereas I am just a physician who has been a “believer” for many years; as I turned the pages, I thought, “yes, yes, yes—this is exactly how it is, this guy has hit the nail on the head!” I consumed this easy read in a day or two, after which time I felt I could do greater justice to my own chapter on exercise because Ray Kybartas, the ultimate expert, had shared his wit and wisdom with me. It wasn't until I read this book that I realized that I have been an avid practitioner of the *religion* of fitness!

I picked up Dr. Andrew Weil's *Eating Well For Optimum Health* while spending time in the ship's library during a week-long cruise (where the notion of eating healthily seems typically thrown overboard!). I eagerly devoured

this informative text, realizing how the important subject of nutrition was given such short shrift when I attended medical school. This book is an absolutely wonderful resource for anyone interested in the basics of human nutrition, and then some. And on a similar note, Greg Critser's *FAT LAND—How Americans Became the Fattest People in the World* is a very interesting, well-written educational resource that details the factors engendering the American obesity epidemic. Michael Pollan, a Professor of Journalism at Berkeley, is the brilliant author of *The Omnivore's Dilemma* and *IN DEFENSE OF FOOD: An Eater's Manifesto*. These two books are essential reads that were real eye-openers for me regarding the food industry, nutritionism, processed food, and the means of making thoughtful and healthy food choices. Brian Wansink is a food psychologist and author of *Mindless Eating: Why We Eat More Than We Think*, an illuminating and fascinating resource.

The New York Times, the newspaper that provides me with my daily dose of educational nourishment, has been a fabulous resource. Rarely does a day go by without an article on lifestyle, diet, or exercise that has provided me with substantial fodder for refining my chapters with temporal and meaningful information. Interestingly enough, many of my youthful elderly patients who were interviewed to discover their secrets to longevity reported that they, too, were readers of the *Times*!

Thank you to my uncle, Michael Isaacs, a well-respected San Francisco psychotherapist, who also teaches yoga, meditation, and tai chi, and emphasizes the mind-body connection to achieve wellness, fitness, and longevity. He was kind enough to provide a most constructive critique of my manuscript and helped me achieve a grounded and balanced discussion of exercise, emphasizing the holistic approach as opposed to the conventional approach, which allowed me to come to the realization that there are many different means of reaching the same endpoint.

Thank you to my children—Jeffrey, Alexa, and Isabelle—three invaluable reasons for my wanting to find my own fountain of youth and maximize my longevity. Hopefully, I have rubbed off on them at least a little bit, because I want us to be together—and healthy!—on this planet for as long as we possibly can.

Finally, thank you to *you*, the reader, for taking the time out of your life to spend time with me and my words. I hope that this time will prove well spent and worthwhile, and that my words receive a better reception than James Joyce's *Ulysses*, as indicated in this particular terse review: "*The poor trees who gave their lives that Ulysses might gather dust on countless shelves would have been put to nobler use as toothpicks.*" May my pages serve to contribute to your own personal discovery of the keys to *overall* health, well-being, and optimal longevity.

PREFACE

Did you ever stop for a moment to realize that you've already won the lottery—big time!! No kidding here! Think about this for just a second: It takes many couples about 6 months or so of sexual intercourse to achieve conception. Assuming intercourse three times weekly in an effort to conceive, and an average sperm count of 200 million per ejaculation, it is the very lucky single sperm out of an astounding 15 billion that fertilized your mother's egg. That's right—one in 15 billion! Those are extraordinarily unlikely odds! Had it been any of the other 14,999,999,999 sperm, you would not be here right now to experience life. So, the gift of life is special, precious, and miraculous...the ultimate mega-jackpot! And you only have one shot at making it the best that it can possibly be!

Fortunately, to this end, we have been given a spectacularly-engineered body—better engineered than the most expensive and sophisticated Mercedes Benz! We have a most elegant operating system self-contained within a streamlined chassis that is governed by a control network consisting of zillions of gigabytes of storage capacity, incredible amounts of random access memory, and an absolutely amazing central processing unit. Built to last 100 years or more, we come equipped with a pump that never takes a break, locomotion, shock absorbers, fine motor abilities, the ability to process light, sound, smell, tastes and touch, with night-vision as a standard option, a coolant system, a heating system, a self-sealing system for leaks, a fueling system that allows us to use virtually any plant or animal matter for energy, a fuel injection system that allows us to process this fuel, waste management capabilities, an internal repair shop, the most comprehensive built-in pharmacy imaginable, and so much more!

We humans have been engineered in a remarkably clever fashion. We have been structured with tremendous economy of space in mind, with many organs being not only multi-functional but actually able to vary their anatomy under different circumstances like a chameleon. As a urologist, I will use the penis as an example. It has a dual role as a *urinary* organ allowing directed urination that permits men to stand to urinate, and a *sexual* and *reproductive* organ that, when erect, allows the rigid penis the ability to penetrate the vagina and function as a conduit for release of semen into the vagina. No other organ demonstrates such great versatility in terms of the physical changes between its inactive and active states!

Our quintessential human drive is *survival*—survival of the *individual* and perpetuation of our *species*. Survival of the individual is predicated upon proper *nutrition* (fueling), and survival of the species is predicated upon *reproduction*. Our brilliantly clever design has resulted in the coupling of the acts of fueling and reproduction with *pleasure*—thus maximizing our potential for the survival of the individual and the species, respectively. Imagine if we had no enjoyment associated with the process of eating and it was done perfunctorily, solely for the purpose of refueling, as we do with our cars when the fuel indicator tells us that we are in need of a fill-up! Furthermore, imagine if we took no enjoyment with sex, if it was strictly a mechanical act performed solely for the purpose of reproduction, with only as much pleasure associated with it as is the process of artificial insemination! I'll tell you what would happen—humans would be doing a whole lot less eating and having a whole lot less sex! Obesity would no longer be an issue; in fact, many would probably be malnourished—not good for the survival of the individual. If sex were uncoupled from pleasure, there would be many less births occurring—not a good thing from the standpoint of the survival of the species. Thus, our *hunger* and our *libido* drive our food consumption and sexual activity,

respectively, ensuring well-fueled humans and the greatest likelihood of maximizing the number of offspring. Additionally, more than just eliminating and quenching our *desires and needs* for food and sex, the acts of dining and participating in sexual activities are, by their own right, highly stimulating and attractive social and sensual pursuits that pique multiple, if not all, our senses. It bears repeating—our design and engineering were done brilliantly!

“Love is merely a sleight of hand, doled out by genetic edict in order to keep DNA flowing.”

Nick Sagan, *Idlewild*

So, if our imprinted genetic edict so strongly pushes us to thrive, survive, and reproduce, why do so many of us live the malignant lifestyles that we do? Why does our *nurture* fight our *nature* instead of supporting it and harmonizing with it? Why do we live such dysynnergic existences, marked by self-indulgence and self-destruction? Why do so many of our species act in a way to endanger ourselves?

Why are we so remiss in taking good care of such an extraordinary machine? To me, this very puzzling question has always been a “riddle, wrapped in a mystery, inside an enigma,” to quote Winston Churchill from a 1939 radio broadcast. I, personally, make every effort to keep my machine well-tuned, both internally and externally. I am constantly surprised to find that most people take better care of their automobiles than they do of their own bodies! Cars receive the benefit of preventive maintenance, scheduled oil changes, routine tune-ups, not to mention regular washing, waxing, and detailing, while at the same time their owners grow increasingly obese, chain-smoke cigarettes, drink far too much alcohol, fail to get sufficient sleep, exercise minimally—if at all, and only consider seeing their doctor when they fall ill. Go figure! Why do we demonstrate such self-loathing and self-annihilating

behavior? In this new millennium, there is rampant fear of terrorist attacks, avian flu, mad cow disease, SARS, MRSA, anthrax, and West Nile virus—at the same time that many of us live a lifestyle that promotes cardiovascular disease, diabetes and cancer! While we do not have a great deal of control over terrorism and pandemics, we certainly have the ability to engage in a lifestyle that supports good health and wellness and helps us steer clear of avoidable morbidity!

“Far too many Americans have come to believe that the pursuit of health is a burden, an imposition on their already over-scheduled, over-committed lives. Yet, maintaining a healthy lifestyle is not burdensome—it is liberating.”

Ray Kybartas, *Fitness is Religion—Keep the Faith*

I contend that we are *beyond* lucky in winning this “lottery of life,” a gift that provides us fully equipped with such a phenomenal and sophisticated machine, and that we ought to accord it the respect it deserves. This requires that we be extremely compulsive about scheduled maintenance in order to keep our systems in optimal working order. Translation: no abusive and self-destructive behavior, including smoking, recreational drugs, and excessive alcohol; the avoidance of undue stress; sufficient sleep to rest our parts; regular doctor visits; the highest quality nutrition for fuel; and foremost, exercise, exercise, exercise...*every single day if possible!*

At the precise moment when the sperm fertilizes the egg, our genetic blueprint is determined—what is referred to as *nature*. Our blueprint is based upon our parents’ blueprints as well as a mix-and-match genetic recombination phenomenon that occurs to shake things up and promote diversity. Genetics are *fundamentally* important as they are the coding that dictates every aspect of our development as human beings. The genes located

on our chromosomes will encode for every aspect of our physical development and maturation into unique adults, much as an architectural structure is built based upon a blueprint. It is somewhat like being dealt a hand of cards—it is beyond our control, somewhat luck-dependent, and oh so important. If we are lucky, we may be dealt a good hand of cards that allows us the *potential* to live a long and healthy life, free of cardiovascular disease and other maladies. If we are unlucky, we may be dealt a poor hand of cards that may dictate the early onset of cardiovascular disease and other illnesses.

Fortunately, nature alone is not responsible for our health, although it is of paramount importance. We do have some say in the matter—what is referred to as *nurture*. This is how our environment can influence our genetics, and includes diet, exercise, and other lifestyle issues. So we have *nature*—the cards we are dealt, and *nurture*—what we do with ourselves. The combination of nature and nurture will determine our destiny in terms of health and longevity. It is debatable what the relative influences of nature and nurture are in determining our human qualities, although it is my feeling that nature trumps nurture. Generally and roughly speaking, there are four permutations of nature and nurture:

Good nature—good nurture: this very fortunate person has been dealt a lucky hand of cards and maintains a healthy lifestyle, and has every probability of significant longevity.

Good nature—poor nurture: this person has been dealt a lucky hand of cards but has chosen to maintain an unhealthy lifestyle that may well mitigate the salutary effect of the good genetics.

Poor nature—good nurture: this unlucky person has been dealt a poor hand of cards but has chosen to maintain a healthy lifestyle that hopefully will negate the poor genetics.

Poor nature—poor nurture: this unlucky person has been dealt a poor hand of cards and has chosen to maintain an unhealthy lifestyle and in all probability will have poor longevity.

The bottom line is that even though we may not be fortunate with our inherited genetic blueprint, we do have some control over our destinies, as our lifestyle can indeed influence our genetics.

“Genes load the gun, but lifestyle pulls the trigger.”

Anonymous

“We cannot change the cards we are dealt, just how we play the hand.”

Randy Pausch, *The Last Lecture*

I am neither a nutritionist nor an expert in nutrition and metabolism. I do not have a PhD in exercise physiology, although the science of exercise is a discipline that really interests me and I take every opportunity to expand my knowledge of this complex subject. I am not a personal trainer nor am I a physical therapist. What I am is an energetic, motivated, and curious human being, trained in the specialty of Urology. Urology involves the medical and surgical treatment of the genital-urinary system throughout the entire spectrum of human life, from pediatric to geriatric. Traditionally, Urology establishes one as a *men’s health doctor*. However, my practice is equally split between both men and women, as an important focus of my practice is female incontinence and pelvic relaxation. Because of the age range of urology patients, I am fortunate to be a student of the aging process while at the same time serving the role as an educator to my patients. As a physician, I have learned firsthand how important lifestyle choices are in influencing one’s health, and I have put a great amount of effort into practicing what I preach and providing a good model for my patients as a fit physician who embraces a healthy lifestyle.

I have always been fascinated with the aging process from a biological, clinical, and psychological perspective, and the extraordinary ways in which diet, lifestyle, and exercise contribute to our vitality. As a physician and a surgeon, I am privileged with the opportunity to treat patients who have entrusted me with their care and allowed me open access into the most intimate details of their lives and, in so doing, have served as great sources of information and experience. My interactions and long-term relationships with many chronologically elderly but physiological youthful patients have taught me what no medical text could—how to live well and maintain an excellent quality of life until a very advanced age.

Many of my thriving *youthful elderly* patients—septuagenarians and octogenarians—were interviewed for this book and/or wrote short essays revealing their own personal secrets that have allowed them to achieve *quality longevity*. I found the written narratives to contain some very compelling stories and pearls of wisdom that are well worth reading. These narratives will appear scattered throughout the book. I adored one such “gem” of a reply from an 85 year old that essentially captured most every attribute of what it takes to age well:

I have experienced good to reasonable health through most of my 85 years. How has that been accomplished? I'm sure I started out with pretty good genes and no one on earth has control over that. So what has life been like for me? Life has been very good—through moderation in all aspects of life. I was born the eldest of 3 sons in the great state of Michigan. My parents generally enjoyed good health all of their lives. Dad was 87 and Mother was 84 when they passed from this life. Of my two brothers, the youngest is now 80 and our middle brother departed this life with Alzheimer's at 67. After Bible school, college and seminary, I married my wife of 60 years, whom I met in college. Our family consists of 5 daughters (all married to their first

husbands), 17 grandchildren and 5 great-grandchildren. We have been very happily married and greatly enjoy our close-knit family. I am a clergyman and we are nearing our 60th year of our church ministry. At 85 and 82, respectively, we plan to retire in the near future. We have fruit every day, eat very little red meat and few huge meals. As our parents were generally low-key, so are we—avoiding extremes in everything as nearly as possible, but always active mentally, reading, keeping alert with world affairs and family needs, etc. Daily moderate exercise, vitamins and minerals are a part of life. We play games, visit friends/family as often as possible, and we interact with a large number of people. To have a long and healthy life one must be a good caretaker of body and mind—strive for an active lifestyle, physically and mentally.

- *Don't become an addict to anything—food, beverages, candy, television, etc.*
- *Walk instead of driving whenever feasible and don't sit too long.*
- *Use the stairs instead of elevators whenever possible. Take short (20 minute) totally relaxed breaks now and then. Read a lot of good, informative material and share/discuss.*
- *Avoid miserable, unhealthy “moods” like a plague!*
- *Quality of life is ultimately determined by how you cope with all types of circumstances—so particularly learn to cope well with unexpected, disagreeable circumstances.*
- *Remain low key.*
- *Learn to give without expecting or demanding anything in return.*
- *Exercise self-control.*
- *Do not harbor grudges or an unforgiving spirit.*
- *Try always to accent the positive and eliminate the negative in life.*

Through knowledge tapped from this richest of resources—the youthful elderly—coupled with experience gleaned via

my own personal journey toward fitness, health, and wellness, my goal is to function as a *healthy lifestyle ambassador*, to facilitate and help enable the glow of youth to shimmer on for as long as is humanly possible. This book concept was engendered by my own passion for remaining young, healthy and fit, as I am an avid believer and participant in the quest for youth through the practice of exercise, nutritional conscientiousness, and an intelligent lifestyle. I intend to examine the process of aging and the effects of time, environmental exposure, and poor lifestyle choices in terms of their external and internal manifestations; the reader is then provided with options as to how to mitigate these factors.

No one is capable of *stopping* the time clock, but adherence to a few simple and commonsense measures can certainly *slow* down the tick of the clock. These key measures, in short, include: an active existence and a positive spirit; weight management; preventive health care; intelligent lifestyle choices; and physical, mental, and social engagement. My intention is to disprove that the term “youthful elderly” is an oxymoron, and to elucidate the ways in which one can become a member of this elite group. I would like to coin and introduce a new term—**YEPPY**—a **Y**outhful **E**lderly **P**erson...a group that may be aging, but is aging incredibly well.

“The meaning of life is not simply to exist, to survive, but to move ahead, to go up, to achieve, to conquer.”

Arnold Schwarzenegger

FOREWORD

“The future becomes the present, the present becomes the past, and the past turns into everlasting regret if you don’t plan for it.”

Tennessee Williams

It seems obvious that wellness and fitness are so clearly associated with good nutrition and exercise. Our bodies must be fueled properly to provide for optimal growth, tissue repair, and the energy to perform tasks. Our bodies and minds demand to be stimulated, and this occurs through physical exertion and mental activity.

An 11-year study published in January 2008 in *PLoS Medicine* studied the longevity benefits of the following four health behaviors: not smoking, alcohol consumption in moderation, physical activity, and fruit and vegetable consumption of at least five servings daily. A simple 0-4 scale was used indicating how many of the four behaviors each person engaged in—one point being given for each factor. Conclusion: those who scored a 0 had four times the risk of dying than those who received a 4; pursuing all four healthy behaviors resulted in an additional 14 years of longevity! Bottom line: Avoid smoking, drink moderately, exercise, and eat your fruits and vegetables and you will be doing your best to maximize your longevity. What sounds so obvious was clearly proven in a long-term scientific study.

In spite of this apparently clear connection between wellness and fitness, our society has been remarkably remiss in acting upon it. It begins early in our childhoods, when our parents, grandparents, teachers, and others somehow fail to introduce us to a wellness and fitness

lifestyle. Many of those caring for young children simply do not understand the link between health problems and poor nutrition and lack of exercise. No mother or father wants to believe that they, as loving and concerned parents, are contributing to their child's ultimate risk of heart disease, cancer, stroke or diabetes by not fostering proper nutritional habits and adequate physical exercise. Many children eat little to no fruit or any green, leafy, or yellow vegetables; it should come as no surprise that greasy, fat-laden, salt-ridden French fries are the most commonly-consumed "vegetable"! The consumption of non-nutritional snack foods, candy, sweetened beverages, fast foods and high-calorie desserts is rampant among schoolchildren and coupled with insufficient exercise, is directly related to our youngsters' current obesity epidemic.

It is imperative that we as parents, absolutely, positively and completely influence our children in terms of good nutrition, exercise, and overall fitness. It is nothing more than common sense to act as a proper role model for our sons and daughters by not smoking, by exercising on a regular basis, and by consuming healthy foods—plenty of fruits and vegetables, whole grains, items with oils low in saturated fat, salt and sugar in moderation, and non-fat or low-fat dairy products. As parents, we can exercise control over what foods are available to our children, provide the social context for proper eating behaviors, educate our children about food and nutrition while grocery shopping or cooking and lead by example.

Recently, while working out on my treadmill, I put on the television and became absorbed in watching a seriously competitive seniors' tennis match. Amazingly, during a commercial break, there was an advertisement for an upcoming broadcast event called the "Tour de Gorge," a competitive "conspicuous consumption circus" sanctioned by the International Federation of Eating! Can you believe

it?...only in America! Add gluttony to our sins of indolence and sloth.

If we can teach our children the benefits of proper nutrition, exercise and fitness, then perhaps the next generation of adults will not be beset with what is termed *Civilization Syndrome*, a cluster of health issues that have arisen as a direct result of our sedentary lifestyle, which supports overeating, physical inactivity, and a stressful existence. As a result of our collective cognitive superiority, humankind has gone from a feral to a domesticated existence. Our brain power has ultimately led to significant and progressive technological advances that have made daily living so much easier for us. But we have become victims of our intelligence—we are *so smart that we have gotten stupid!* Civilization has fostered laziness and the demise of our bodies! Remember, the terms “obesity” and “fitness” are relatively recent terms—there was a time when food was not plentiful, refined and fast foods were not available, and exercise was obtained through the labors of physical work. The occurrence of obesity and the need for fitness are consequences of our economic and technological success.

Too often, *Civilization Syndrome* leads to obesity, high blood pressure, high cholesterol, and insulin resistance (when the amount of insulin secreted is no longer able to get glucose into cells, resulting in additional insulin secretion—essentially, the cells resist the insulin, resulting in high blood glucose)—ultimately resulting in such health problems as diabetes, heart attacks, strokes, cancer, and premature death. The diabetic situation in our nation has become outrageous—about 20 million people have diabetes and an estimated 54 million are pre-diabetics, many of whom are unaware of their pre-diabetic state! Almost 50,000,000 Americans, including 50% of persons older than 60 years of age, suffer with *Metabolic Syndrome*, defined as having three or more of the following: high

glucose; abdominal obesity; high fats (triglycerides); low levels of the “good” cholesterol (HDL); and high blood pressure—it is no wonder we have a real crisis on our hands.

“Many of us have an ingrained, deep-seated discomfort with our bodies. In this technological age, we no longer do much physical work. Our bodies are an inconvenient appendage to our heads. We make our living by reading, writing, speaking, and thinking, but seldom by physical labor. The nature of our work is written on our physiques, and the imprint of our sedentary lifestyle can be read in our posture, gait, and carriage. The physical profile of most middle-age Americans is distressingly similar—necks canted forward, shoulders rounded, abdomens flaccid, appendages skinny and weak...Our neglected bodies are repositories for stress, depression, and illness.”

Ray Kybartas, *Fitness is Religion—Keep the Faith*

In the United States, we even have a problem with canine obesity! Yes, that’s right—5% of American dogs are obese and 20-30% are overweight! Only in America! Apparently, American pet owners don’t even have the will power to restrict their dog’s diet! It is understandable to me how a human may have trouble with a diet intent on weight loss, but unfathomable to me that a pet owner has trouble restricting what their pet eats! In January 2007, a new drug, *Slentrol*, was approved for canine obesity. Hey America, how about just running your dog in the park a little and not feeding Fido the morsels of the Big Mac and fries that you left on your plate!

As young adults, we generally have unbridled optimism and enthusiasm regarding our health and invincibility from disease. By middle-age, reality tempers the naiveté of youth, at which time health-damaging lifestyle choices—perhaps including too much fat-laden food, alcohol,

tobacco, stress, and a sedentary existence with minimal, if any, exercise—start taking their toll in terms of physical consequences. The resultant clogged blood vessels can adversely affect many of our important organs, including our hearts, brains, kidneys, and retinas, as well as impair our sexual function. Additionally, the physical burden of carrying around excess weight (even as little as 10 extra pounds!), can be responsible for back pain, arthritis, and joint problems (particularly of weight-bearing joints such as our knees).

Unfortunately, our technological-oriented health system is driven more by cure than care and is still in a state where curing disease trumps promoting health and avoiding disease altogether, although the tides are beginning to change. We must participate in this “revolution” by being **proactive** in pursuing and obtaining a state of wellness and fitness as opposed to simply being **reactive** in response to the diseased state that so often results from neglecting and abusing our bodies. There is no reason why we cannot maintain good health and fit bodies until very late in life. The adage, “*an ounce of prevention is worth a pound of cure*,” is an incredibly fundamental precept as it applies to wellness. Today, the average life expectancy of an American man is 75.2 years and about five years more for an American woman. With ongoing, focused attention to fitness and well-being, there is no reason why we cannot live healthy and productive lives until one hundred years of age or more! *Wellness* is a movement intent on the nurturing of our mental, physical, and spiritual well-being in a balanced fashion. In fact, the wellness movement may be described as the zeitgeist of our baby boomer generation, as we are embracing it with enthusiasm as a means to longevity.

“Wellness is an attitude of responsibility for one’s health and well-being.” Debra Coryell,

Health and Wellness Director for King Ventures

This trend toward health maintenance and the proactive approach is being fostered by *integrative* medicine, a novel approach to health care that considers and treats the *whole* person (hence, integrative), and not just the malady. Integrative medicine is based upon a model of maintaining *health* as opposed to curing disease and incorporates the concept that *healing* can be just as important as *curing*. Patients want their doctors to be able to listen carefully to them, empathize with them, and take the time to explain the nature of their problems in the context of nutritional and lifestyle influences. In fact, *lifestyle medicine* is emerging as a new branch of internal medicine that focuses on aggressively promoting the practice of maintaining a healthy lifestyle in order to ward off disease and illness. Patients appreciate a broad-minded approach in terms of management options—particularly a physician willing to consider complimentary and alternative approaches as potentially viable options versus traditional medications and surgery. Alternative, complementary, and holistic modalities have become increasingly popular, including herbal medicine, dietary supplements, acupuncture, chiropractic, massage, etc.

Unfortunately, the United States health care system is clearly broken and in dire need of reform. Almost 50 million Americans, including 8 million children, lack health insurance. And those who are fortunate enough to have medical insurance spend dearly for it—more than people of any other country and yet we have the highest infant mortality rate and one of the lowest life expectancies of any wealthy nation! The system lacks integration and is incredibly fragmented, creating major inefficiencies. Insurance companies often make every effort to market their insurance sales to the healthiest members of the population and, through a process called *underwriting*, try to avoid selling health insurance to the sickest—those that most need coverage—or alternatively, charging them higher premiums. Insurance companies often refuse to

cover pre-existing conditions, and the red tape and documentation demands on physicians are onerous. The administrative costs are way out of control, with more than half on the basis of marketing and underwriting. Adding to the phenomenally expensive cost of health insurance in the United States are pharmaceutical costs and device costs (e.g., surgical implants such as pacemakers and prosthetic joints) which are outrageously high as compared to drug and device costs in other countries for the exact same products.

The health insurance companies have been remiss in advocating the concept of health maintenance and have not been willing participants in the health promotion revolution. The moniker “health maintenance organization” (HMO) is an incredible euphemism if not a downright lie. The truth of the matter is that health insurance companies are businesses whose goal is to make a profit. The business happens to be health care, but it could just as well be widgets. X amount of money in premiums, Y amount in payment for “benefits” (another euphemism): profit equals $X - Y$. The chief executive officers of many of these HMO’s are paid tens of millions of dollars annually while the patients are being denied claims and the physicians are being nicked and dined! The bottom line is that these companies do not particularly care about your health: what matters to them is a huge profit at year end. Many will not pay for preventive health measures and well care, but will pay for drastic solutions to late-stage problems. For example, many insurance companies will not cover well care to try to prevent the rampant problem of diabetes in America, but they will pay for the leg amputation that is due to diabetic vascular disease!

Recently, for example, I went to my internist for my annual physical. I was not having any health issues or problems; I simply wanted a good careful physical examination, electrocardiogram, blood work, etc. I gave the medical

receptionist my insurance card and was asked if my health insurance company covered routine physicals. I replied, "One would think so." WRONG ANSWER! I was flabbergasted! Do not assume that health insurance will cover pre-emptive physicals and other diagnostic testing that might enable problems to be picked up in their earliest phases. How stupid and ridiculous is this inane system? Health maintenance organizations should really be called wealth maintenance organizations! My advice is to be your own advocate—do not tolerate this nonsense from the insurance companies. Go through the proper channels to lodge complaints, be vociferous, write your senators and congressman, make waves; as Ross Perot once stated: *"Be a grain of sand that irritates the oyster that creates the pearl."*

Chapter One

MY JOURNEY TO FITNESS

The intent of this section is not to be a self-aggrandizing and narcissistic paean to myself—it is simply a discussion of how a somewhat overweight college student ever so gradually discovered fitness, which ultimately became an important part of his being. Reading this chapter is certainly not absolutely necessary, but I thought that an account of my own evolution into a fit adult might prove interesting to some and perhaps inspirational to others. If I can function as a catalyst for change for the better for another human being to galvanize them in the direction of fitness, then I consider myself successful.

I was in okay shape as a child, being a relatively skinny kid until I was twelve or so years old. I had lots of energy, was often in motion, and spent most of my free time at the schoolyard or in the local park playing football, softball, basketball and stickball, in the days before supervised “play dates” yet existed. My primary mode of transportation was my bicycle. I *loved* my bike...I still do! In the winter, I could play in the snow for hours and I enjoyed skating and sledding. While I did watch my share of television, there just was not much time for being a couch potato. Summers were spent at day camp when I was a young child and sleep-away camp when I was older, where I was constantly a participant in all sorts of sports and physical activities.

I must confess that I did not eat particularly well because I did not know any better. I often had sugary cereal for breakfast, and I remember eating a lot of baloney sandwiches on white bread with mayonnaise for lunch!

Just the thought of that now makes me cringe. Dinner, fortunately, was usually a healthier, home cooked meal from Mom. Around adolescence, I developed that pre-pubescent chubbiness so characteristic of 12 and 13 year olds. I eventually trimmed down and remained of average weight and build during my later teenage years. I was not particularly “athletic” in high school; I did join the soccer team for a few years and I played a lot of after-school “pick-up” sports. I am not particularly proud to report that my highest level of team sports achieved in high school was the math team!

Now, let me fast forward to freshman year at college—every evening around 10:00 p.m., after several hours of cracking the books, I developed the habit of eating two glazed donuts sold by an enterprising student who made evening rounds in the dormitory of Middlebury College. Every evening! Donuts were a very soothing antidote to a night of studying! I insidiously gained weight. During winter break I distinctly remember my friends laughing at me as I exposed my flabby torso when removing my shirt to try on some clothes. Unfortunately, I had put on quite a few pounds, engendered by eating, in only 3 ½ months, enough glazed donuts for a lifetime! I had succeeded in putting on the *freshman 15*. Shortly thereafter, I vacationed with my family in Florida. I attempted to go jogging with my younger brother, who just happened at the time to be the captain of the Teaneck high school tennis team. I became winded almost immediately, coming to a complete stop as I gasped for air on some street corner in West Palm Beach as my brother easily went on to run several miles. At this juncture, I came to the sobering realization that I had allowed myself to become an overweight, out-of-shape eighteen year old. I was completely responsible for this.

I saw an advertisement on television for “the bull-worker,” a compressible rod (using the principle of isometrics)

touted as the miracle machine I needed to help get me back into shape. I could not order that device quickly enough! I used it diligently and thought that this would be the answer to getting back into a healthy weight and building muscle strength and tone. After several months of “bull-working” my way toward being fit, I realized that this was not the answer and that I had actually gained more weight! The truth is, I had not incorporated any aerobic activity into my so-called workouts, and I had done nothing to change my donut-dependent eating habits! So much for the effectiveness of the bull-worker! What it did teach me, however, was that avoiding cardiovascular exercise and consuming “garbage” are definitely NOT the best ingredients for a fitness regimen!

The 1976 Summer Olympics were what really first inspired me to truly begin and maintain an exercise program. For some reason, I became fascinated with the track events and this motivated me to take up jogging. First a mile or two, then three miles, then five miles, then I started participating in 5K and 10K running events. Slowly, I began getting into good shape. I incorporated sit-ups and push-ups into my new regimen as well. Just as importantly, I paid closer attention to my diet and nutrition in general.

The rigorous demands of medical school did not exactly lend themselves to having the time to focus on fitness. Luckily, though, I lived right next to the lakefront in Chicago, which made it easier to sneak an hour here or there on the lakefront running path. I picked up racquetball in the winter months. I was eating less (no more donuts for me!), exercising more, and finally starting to look fitter! During general surgery internship and residency at North Shore University Hospital in Manhasset, New York, I now *made* the time to put in plenty of hours jogging on the hilly streets of Northern Long Island, often running with the good company and inspiration of my close

friend, Andy Schwartz, now a cardiac surgeon in Kansas City.

I next spent four very rigorous years at the University of Pennsylvania School of Medicine undertaking my Urology residency. This involved clinical rotations at five different hospitals and was, as you might imagine, extremely time-consuming. When I was on call, for example, during a weekend at the Hospital of the University of Pennsylvania, my work hours were Saturday 8:00 a.m. straight through until Monday 10:00 p.m.! I was basically living in the hospital (hence the term *resident*), without any break. By Monday, I was slap-happy with sheer fatigue, laughing away at anything remotely funny! Obviously, my ridiculous schedule was certainly not conducive to maintaining a good fitness regimen. In spite of this, I joined my first of many fitness clubs while in Philadelphia. My free time was limited, but I made my best effort to get in a workout when I could. Now, I not only ran, but also used a variety of aerobic machines, lifted weights, and swam. I was consciously making exercise as much a part of my daily existence as I possibly could, given the time constraints that I faced. Somehow, I managed to make it through Urology residency in reasonably good physical shape.

After Urology residency, I spent a wonderful, RELAXING (at last!), but nonetheless very educational year in Los Angeles doing a fellowship in the sub-specialty of *incontinence, voiding dysfunction, and reconstructive urology* at the UCLA School of Medicine. This was a great transitional year between the rigors of my residency in Philadelphia and my entry into private practice. While I was a focused, busy urologist-in-training during the weekdays, I had minimal evening and weekend hospital-related responsibilities; this allowed me ample free time to enjoy Southern California and the very unique cultural, physical, social, and “psychological” opportunities it had to offer.

I resided in lovely Manhattan Beach, California. Manhattan Beach is considered a surfer's paradise and every morning as I departed for UCLA, I would see all the surfers in their wet suits heading for the Pacific, talking their very unique "talk" (a language that included "dude"; "gnarly waves"; etc.), and always looking lean, trim, and happy. I lived immediately adjacent to the beach, which was blissful and so conducive to stress-free living...and fitness! I went to sleep every night to the lulling sound of the ocean's surf and, to this day, I need my techno-generated machine to simulate surf sounds in order to help me fall asleep! Right outside my apartment, virtually on the beach, was an extended running path as well as a bike path, which went on for miles and miles. To be actively exercising while viewing the gorgeous beach front and surf framed by the magnificent mountains of Santa Monica to the north and Palos Verdes to the south was heavenly. The running and bike paths were filled with enthusiastic, energetic, *fit* people—always a blast to watch and appreciate as I myself ran or cycled. Sometimes, my jogs would take me inland along pathways lined by aromatic spices and scents—all of this was literally intoxicating! Here was a place where everyone was truly enjoying and really relishing the act of exercising!

I joined a fitness center called *The Sports Connection* that, to this day, remains the best I have ever been a member of. It was the most fully equipped, exercise-inducing place imaginable, very upscale, offering everything from a health food bar to a sports boutique. I started taking aerobics classes here; I was incredibly clumsy at first, having a great deal of difficulty keeping up with the pace of these complicatedly-choreographed routines. I was in awe and immensely respectful of the class participants, many of whom were women...of all ages! And they all were extraordinarily fit! General aerobics was a one-hour class that provided a very thorough and balanced exercise regimen. I would frequently awaken at the painful hour

of 5:30 a.m. in order to make a 6:00 a.m. class that, astonishingly, was always booked to the maximum. What a great way to jump start a day before work or school! *The Sports Connection* also provided many social opportunities, such as wine tasting classes and organized ski trips to Mammoth Mountain, both of which I availed myself of.

There is just something *special* about the West Coast when it comes to fitness—the collective health consciousness of this area was like nothing I had ever witnessed before. It's difficult to describe because it is impalpable and intangible, but I just felt a powerful sense of health and well-being in California—perhaps it had something to do with the serenity of the sun setting on the Pacific Ocean (vs. rising on the Atlantic). I must confess that it was not easy coming back to the East.

Although I never learned how to use a surfboard, I did learn how to use a boogie board, a really exciting and thrilling experience and a great form of exercise. This required a wet suit because of the cool waters of the Pacific Ocean and fins on my feet to facilitate swimming out far enough and fast enough to get in a prime position to catch a wave. I would patiently wait for the right wave, and when that one arrived, I would be carried on a wild, sensational, and absolutely exhilarating ride to the shore. The best way I can describe it is that it is like being on the wing of a jet! For the few seconds that the ride lasts, all personal woes and worries of the world disappear as you are absorbed and focused in the moment, adrenaline causing your heart to pound away in sheer excitement.

Over the years, since leaving L.A. and going into a suburban northeastern Urology practice, I have consciously continued to remain active in terms of exercise. When I became somewhat bored with running, I picked up in-line skating. I purchased my first pair around 1989; when I first began in-line skating at the county park (which

offered ten miles of paved trails), people looked at me as if I were a madman! At the time, it seemed like I was nearly alone in my pursuit of this suddenly new-found sport—but what a great form of aerobic exercise, with a motion similar to skiing and ice skating yet incredibly vigorous!

I was an avid in-line skater for years after, but when my enthusiasm eventually tempered over time, I decided to take up cycling. Nothing wrong with shaking it up as long as you remain active—*keep moving* was my motto! My wife, Leslie, was not much of a cyclist before she met me, but she agreed to accompany me on a biking weekend—a scenic ride through Vermont—before we were married. Ahhh...what one will do for love! She took a nasty spill and probably never forgave me for “influencing” her to participate, but I have to give her credit for being a trooper! With an income tax rebate, I went on to buy “his and hers” mountain bikes for us, which we still use to this day. Then, one year, for an anniversary gift, I bought Leslie what I believed to be the most romantic (yet practical!) gift I could envision—a hybrid tandem bicycle—a “bicycle built for two,” that we could enjoy as a couple. Although she appreciated the gesture, I can tell you that she more than likely would have preferred jewelry! Although skinny as the proverbial beanpole, she has never been nearly the exercise enthusiast that I am...but she does try! Also, now that my youngest has learned to ride a two-wheeler, we all quite enjoy our family rides!

Tennis is also tremendously fun and gives one a good aerobic workout. I dabbled in the game as a youngster, but became more serious about the pursuit in my early 30s, when I started taking lessons. For years now, I have participated in a county outdoor mens league and a United States Tennis Association league, as well as play indoor tennis two days per week during the autumn and winter months. To this day, I remain an avid player who has attended numerous tennis camps including Amherst

Tennis Academy, Total Tennis, Stratton Tennis Camp and, recently, Bolletieri Academy in Bradenton, Florida. This was a 50th birthday present from my wife and turned out to be the most physically and emotionally challenging tennis school that I have ever participated in. I spent 4 days sweaty and somewhat sore, but it was GREAT! In general, I find tennis to be very enjoyable, a really good workout, and a sport for life—I even play with Leslie, my children, and father and I plan to continue forever so that I someday will hit the ball with my grandchildren!

Another sport that I have enjoyed over the long term is skiing. I skied for the first time at age 15 and was abominable, having never had a lesson. For high school graduation, my parents bought me skis, boots, and poles, as I was headed off to Middlebury College in Vermont, which actually had its own mountain with an excellent ski facility. I became a reasonably good skier and have generally tried to commit at least a week every year to going out West, where the skiing cannot be beat. I have taken family trips to California, Utah, Wyoming, Colorado, etc. Although participating generally in Alpine skiing, I have dabbled in cross country skiing, which is an awesome aerobic sport and actually becomes fun once the basic technique is mastered. One thing is for sure—lessons are imperative, as they are in tennis and golf—if you want to properly acquire the skills to gain competency. Skiing is a fabulous family sport, and one that can be continued until old age. As I have matured, I find that I am less enthusiastic about colder weather and, as such, prefer Spring skiing.

I have always held gym memberships and have never failed to utilize them to the fullest extent possible. For many years, I was a member of the Hackensack University Medical Center Fitness Center, a few minutes walk from my office. I would sneak over for a quick workout when I had down time in the office, or when I had delays between

surgical cases. How incredibly convenient this facility was for me! The problem was that I gradually became too busy with clinical and surgical responsibilities, so it became increasingly difficult for me to find a free moment during the day. Additionally, for many years the Fitness Center doubled as the hospital's cardiac rehabilitation facility, which was attended by many of my own patients; the little time I had became even less so as my workouts were constantly interrupted by well-meaning patients who wanted to discuss their problems, ask a few questions, or just say "hello"! Much to my dismay, I ultimately had to relinquish my membership...but certainly not my commitment to exercise and fitness! If anything, that just continued to increase...exponentially almost, as I realized more and more its benefits to my health and to feeling as vital and youthful as I possibly could.

For some of you, it may not be convenient to travel to a health club, or perhaps your occupation does not readily permit you the time commitment involved in a gym membership. Does this mean that fitness for you is out? Are you consigned to a destiny of paunch, potato chips, and the plush cushions of your couch as you watch TV? No way! Do what I did a few years ago, when I decided to nix the gym membership and set up my own basement gym, which I use on a regular basis...whatever time I want, with or without whomever I want. Mine contains three cardiovascular machines—a Lifecycle, a Versa Climber, and a treadmill. Additionally, I have a station for pull-ups, chin-ups, and dips, a weighted crunch station, and an assortment of dumbbells. Add to this mirrored walls, overhead fan, refrigerator stocked with bottled water, fifty-inch plasma television with high definition, a DVD player, surround sound stereo, and an iPod loaded with great music and, truth is, I've got it *made in the shade*! I'm a bit quirky in that I like to plug my iPod into the stereo system while turning the TV—on the *mute* mode—to a sporting event or something light and diversionary like the

Entertainment channel...do whatever it is that inspires you to go! For me, there's nothing like good music to pace yourself to! I am further inspired by my mounted poster of famed cyclist (and cancer survivor) Lance Armstrong with a look of sheer determination on his face; his framed, signed Tour de France yellow victory jersey that my friends gave me for my fiftieth birthday (this keeps me focused on the credo that, today, *fifty is the new thirty!*); and an antique washer board hanging on the wall to remind me of my goal of a washer board abdomen!

Four or five years ago, I became more committed to road cycling and now consider myself a fairly serious recreational cyclist. I must confess that I'm outfitted from head to toe with the "latest and greatest" gear—plus, I have an awesome, technologically-honed, state-of-the-art bike, although you truly don't need too much in the way of "bells and whistles" to be a good cyclist. My current road bike is a 2005 Trek Madone (Lance Armstrong's basic bike)—this was a gift from a close friend and cycling buddy who is a plastic surgeon on whom I operated. He bought two, one for himself and one for me! This bike is gorgeous, light as a feather, has fabulous components and is an amazing piece of engineering. You know you have a good bike when, like an automobile or a fine bottle of wine, the bike has a year attached to its name! This bike cost more than my first new car, a 1977 Pontiac Firebird! This was a very generous and unnecessary gift, but I am thrilled with it.

What you need to be a good cyclist, first and foremost, is commitment...but, of course, you know by now that that is true with any fitness activity you choose to pursue. I'm fortunate in that I have an extremely nice group of cycling friends to venture out with, so this has not only become a fantastic fitness activity, but a great social one as well! Cycling now comprises a substantial amount of my aerobic workouts, is great exercise, and is truly a whole lot of fun.

My cycling buddies and I are constantly challenging ourselves to improve our skills and ride longer and longer distances and more hilly and difficult terrain. We have participated in many cycling fundraisers, including the 50 mile Bergen Bike Tour as well as the 100 mile New York City Multiple Sclerosis ride. Several of us ventured together up to Northampton, Massachusetts for several days of New England riding under the tutelage of the Ride Noho cycling training camp. We recently returned from a trip to Ashville, North Carolina, where seven of us attended the Chris Carmichael hill cycling camp. I am proud to say that all of us conquered Mount Mitchell (6684 feet of climbing), which for me took about three hours of rigorous and challenging pedaling.

Another activity I've grown to enjoy is golf, which I started playing a few years ago. I'm still very much a novice who often struggles, but I've been finally able to consistently break 100—not a great feat for many golfers, but a real improvement for me. I might not be very talented, but I sure do enjoy it; virtually nothing feels better than taking a sand wedge or pitching wedge and hitting a well-lofted shot softly onto the green with precise control! Nothing! My scores are ever so gradually improving and, on occasion, I find that I can approach the goal I set out to achieve a few years ago, namely, playing *bogie* golf (for those non-golfers out there, this means playing 18 holes and scoring one stroke over par on average for each hole, resulting in a score around 90). Although a bogie may be a *blemish* for the professional, for me it is a *blessing*! Although not offering that much in the exercise department, there is something deeply cerebral and alluring about golf—it's difficult to explain if you have not participated, but so easy to comprehend if you are a golfer. *Walking* instead of riding the cart will afford you some exercise, especially on a hilly course, but as I read in a recent interview, any sport that allows you to “eat a cheeseburger and drink a few beers while you are still

playing” can’t give you too much of a workout! However, it does get you outside and keep you moving, and that certainly earns a spot in the plus column when it comes to remaining active, fit, and “on the ball,” and is a sport that offers immense social opportunities. I only wish that I had started playing when I was a child!

I have always found value in trying different and novel physical activities. Last year I signed up for a number of private Pilates classes, prompted by the recommendation of a patient. I found Pilates to be a terrific workout that focuses on the all-important core muscles and is extremely beneficial to good posture, strength and balance. I wholeheartedly recommend Pilates classes to anybody interested in fitness!

A few months ago, I ran into a physician colleague who I had previously kidded for putting on a paunch. I hadn’t seen him in a while and he appeared very lean and muscular. He told me that he had been doing home workouts using the P90X extreme training system from Beachbody.com. It sounded a little ridiculous and hokey—*beach body!*—but it worked for him and I felt that I was ready to try something new, since my basement workouts were getting rather routine. Beachbody.com has several programs, and the P90X is for those who have already achieved a very respectable level of fitness. A fitness “guru” named Tony Horton runs the show and to quote him: “I hate it but I love it!”. The focus is on the concept of “muscle confusion,” as the program provides an extensive variety of different moves and maneuvers that challenges muscle into new growth and avoids the plateau that often occurs when the same routine is repeated. The program includes the following 12 modules in DVD format:

- chest and back resistance training
- plyometrics (jump training)
- shoulders and arms resistance training
- yoga
- legs and back resistance training
- kempo (martial arts)
- stretching
- core synergistics
- chest, shoulders, and triceps resistance training
- back and biceps resistance training
- cardio
- abdominal and core training

I have grown to really love these workouts (but I hate them!). They are unbelievably challenging but extremely balanced, with a great emphasis on *all* of the components of fitness including cardiovascular fitness, muscular strength, core strength, flexibility, balance, and coordination. There is no standard weight lifting involved—essentially the strength training is push-ups, pull-ups, and dumbbells. I have grown really fond of the yoga and stretching and have vastly improved my very deficient flexibility. Tony Horton is a great motivator who exudes inspiration, and I highly recommend this program to anyone who is in good shape but wants to really push themselves into great shape. This is a hard-core regimen that will leave you energized and invigorated and, if you apply yourself, you will definitely end up with a body that you will be proud to display at the beach. I can honestly say that I have never felt better since adding the P90X workout to my regimen. These workouts have really reinforced to me how important core strength and flexibility are to general fitness. I have especially come to enjoy the challenge of the yoga and the P90X has influenced me to further pursue yoga at a local yoga school. Like golf, I only wish that I had chosen to pursue yoga and stretching years ago. Of note, the latest incarnation of P90X known

as P90X plus is now available. I cannot wait to add it to my fitness regimen. P90X costs about \$120 and is the absolute bargain of the century. I feel that Tony Horton, an extraordinary fitness trainer, is my *personal* trainer! I sent a gift of P90X to my good friend, Andy Schwartz, my running mate from internship, and a copy to my brother, Rick, for his 50th birthday.

“I don’t believe in aging; I believe in moving and eating well—take care of your body and it will take care of you, because time keeps on ticking and you keep getting older. However, you can live better...or you can simply get all gooeey, crotchety, old, pathetic, icky, and gross—not me, I’m just not into it.”

Tony Horton, Creator of P90X

“Fitness is a journey, not a destination. It must be continued for the rest of your life.”

Dr. Kenneth Cooper,
Fitness and Wellness Expert, Cooper Aerobics Center

My journey to fitness is ongoing, continuous and constantly evolving and will end only when I no longer have the means to continue the journey in any capacity. That is only when the journey stops. There are many different pathways to the journey, as I have discovered over the years—it is truly a work in progress. In the case of my journey to fitness, it is not just that the end does justify the means, but the means also justifies the end.

Chapter Two

EXERCISE

RL: Age 82

I was born in the Bronx, NY to immigrant Italian parents. I was the youngest of 5 children: my sisters were 10, 11, and 12 years older and my brother was 13 years older. In high school, I was a star baseball player. I was called into the armed services in WWII and was chosen for flight school. After a near accident, I was re-assigned for 3 years to work with the Gurkas in Calcutta, India, supervising the American supplies being transported via Indian railroads. At the end of the war, I returned to NY to work for a short time on the waterfront. I then went on to college. After graduating, I worked for Grand Union Co., ultimately becoming a VP in charge of distribution up until my retirement. I have always been a spiritual person. I am married to a lovely lady who is now 80, looks like she's 60, and thinks like she's 50! Daily, we have breakfast, then take our second cup of coffee in the living room to talk of our day ahead. We discuss local news, books, family, church, movies and upcoming events in our lives. Around 4:30pm, we again retreat to the living room, where we have tea and go over the day and current happenings. This brings us both closeness and relaxation. We are also avid bird watchers and passionate gardeners. Exercise has always been important and I do warm-up routines prior to a daily mile and a half walk...seven days a week! For several years, I was a senior star marathon runner and have won a number of gold medals in senior events. For me, exercise has always been a way to handle stress and I believe strongly in "walking it off." I have been skiing since my early adult years and continue to ski now, being a member of the "Over 80s Ski Club." I take multi-vitamins every day, plus an added E

and C supplement, eat meat only once a week, consuming fish, veggies and fruit the other days. I do not smoke and do not indulge in sugar items or salty products. However, I do enjoy a martini with my wife on Friday nights, sitting in the living room listening to music by candlelight. We still enjoy dancing together...a great stress breaker. My father lived to his mid-80s and two of my sisters hit 87; another died at 70. My mother passed on at 52 from cancer. My attitude has always been one of optimistic thinking, having a great sense of humor and, particularly, being able to laugh at the funny side of life. Keeping a light heart, being non-judgmental and always willing to be of aid to a friend or neighbor has helped to make life very pleasant. (P.S., My hair is still black, I don't get mad, and I see my doctors!)

“We are not tired at the end of the day because we get too much exercise—but because we do not get enough exercise. Mentally, emotionally, and physically drained from being sedentary...If you put any value at all on your quality of life, the time you spend exercising becomes a bargain. Carve out the time to exercise, make it ‘protected time’ and guard it fiercely against intrusion.”

*Chris Crowley and Dr. Henry Lodge, Younger Next Year:
A Guide to Living Like 50 Until You're 80 and Beyond*

I would like to add one addendum to this seminal observation by Chris Crowley and Dr. Henry Lodge: “If you put any value at all on your **quality** and **quantity** of life, the time you spend exercising becomes a bargain.” My conviction is that exercise is the most important and underrated means of maintaining health and wellness and maximizing longevity. To paraphrase Crowley and Lodge—human beings are not meant to be sedentary, but physically active creatures using our wiles as well as our bodies to survive! We are not meant to be sitting in our cars commuting back and forth to work, on our derrieres all day at our desks, and slouched on the couch all evening watching television, playing video games, or surfing the

internet. We are designed to be chasing our prey through the jungle, loping across the plains to the nearest waterhole, and running at full speed from our enemies. However, our brainpower and collective technological advances have eased our lives to the extent that physical activity is no longer a necessity for survival. As a result, exercise is not a part of the lifestyle of many persons (although we are programmed, at our most fundamental level, for physical activity). So, why bother with exerting ourselves if there is no real necessity? Why waste energy?

Why? There are numerous compelling reasons as to why we should exercise. Not only is exercise good for you on so many different levels, but you can and just might actually get to the point where the act of exercising will be enjoyable; where, most importantly, after completion of the activity, you will have achieved a much improved state, both physically and mentally, feeling well, balanced, and engaged. The resultant exercise “high”—a heightened sense of well-being, alertness, exhilaration, and soothing afterglow—can become so seductive and addictive that you can get to the point where you will actually *crave* exercise, and where failure to exercise may lead to withdrawal symptoms such as anxiety, fatigue, lassitude, and depression!

I contend that an *exercise dependency*, in which exercise becomes your “drug,” is one of the few healthy dependencies you can have (although it certainly is possible to carry it to an extreme). The euphoric state achieved by jogging, for example, is often referred to as “runner’s high”; I personally find that it takes me at least three miles of running to achieve it. When you can achieve this Zen-like state, monotony actually can become pleasurable and repetition can become a source of comfort! This “entranced” state is ideal for letting the mind ruminate and meditate; I keep a notebook and pen close at hand and often have to stop the treadmill for a moment, hop

off, and scribble down an interesting thought or idea. Many concepts for this very book were, in fact, conceived in my Zen-like state!

In the early 1960s, Dr. Ralph Paffenbarger (who died in July 2007 at the age of 84), did a longitudinal study of Harvard and Stanford graduates and concluded that exercise, as opposed to a sedentary existence, lowers ones risk for cardiovascular disease—setting the stage for the aerobic exercise movement of the 1980s. Dr. Paffenbarger himself practiced what he preached, being an active participant in the exercise lifestyle. His feelings on exercise are summarized in the following quotes from him (source: “The New York Times” obituary): “By the second week of exercise (running), I was hooked...I found it invigorating. I could consider my thoughts and conflicts, I could prepare letters, ponder problems, prepare talks.”

This phenomenon of achieving a Zen-like state is not exclusive to running as any prolonged aerobic endeavor can result in this calm, lucid, mood-related feeling. The “runner’s high” certainly does not occur *every* time I engage in an aerobic exercise, but I *always* do end up feeling better after than before I began exercising. An added bonus is that one always looks better, too—there’s nothing quite like the “afterglow” of a vigorous, sweat-inducing workout.

“Man must toil, he must work in the sweat of his brow, whoever he is, and in this alone is encompassed the sense and the aim of his life, his happiness, his raptures.” Anton Chekov

Exercising is useful for exorcising your demons away, whatever they may be. I find myself using the salutary, short-term effects of exercise to combat fatigue and stress. That’s right, expend energy to gain energy!—sounds counter-intuitive? Not at all! As a physician, I am subject to quite a bit of stress, and have the onerous task (as I’m

certain many of you do), of balancing professional responsibilities with family and personal needs; exercise serves as a fine tonic to help deal with these issues, no matter what or where the circumstances. The first thing I do, for example, when I am traveling is to scope out the hotel's exercise facility immediately after checking in. Working out is absolutely *transformational* to cure the ills associated with traveling and a terrific antidote to jet lag.

A few years ago, I flew to South Africa for a urology meeting. After an eighteen-hour flight, coupled with a six-hour time change, I was completely and utterly spent and exhausted. Shortly after my arrival in Capetown, I donned my gym clothes and went to the hotel's fitness center, literally forcing myself to do a full, fast-paced workout. Amazingly, after a shower and fresh clothes, I felt like the proverbial "new man"—renewed, restored, invigorated, and ready to "attack" my new environment.

There is no excuse for not exercising when you are traveling. Hotels are becoming more and more indulgent, recognizing the exercise ambition of much of the baby boomer generation. Many hotel fitness facilities have been renovated and are now outfitted with state-of-the-art gym equipment and plasma televisions and are open 24 hours daily, seven days a week. Some, such as the Westin chain, offer (for a fee) a hotel room equipped with treadmills, workout DVDs, resistance tubing, stability balls, and yoga mats. Some hotels offer personal training sessions. The W Hotel chain has invested heavily in new equipment, has teamed up with Puma to offer athletic clothing for sale, and even offers its visitors preloaded iPods with urban running guides and the use of route maps and bikes. So there are no excuses! Additionally, if your flight happens to be delayed, as seems to happen more and more often these days, you can now find fitness centers in or near many airports. Instead of munching on overpriced, fat-laden, stale airport cuisine, you can use your down time

wisely and productively. A comprehensive list of such facilities is available at www.airportgyms.com.

I find that when I attend a medical conference that requires sitting and listening to lectures for more than a few hours, I am left deeply fatigued and feeling unwell because I am an energetic individual who relishes activities and moving about. My only solution for assuming a state of normalcy is very aggressive, sweat-drenching cardiovascular exercise, functioning to transform me back to my typical energetic self. The same holds true for putting in a long day in at the office—after ten hours or so of seeing patients, I often find myself exhausted AND very stressed. As soon as I get home, I change into workout clothes and head downstairs to my personal fitness center. After a good aerobic workout coupled with some strength training, followed by a nice, hot shower, I emerge—physically and emotionally invigorated, my stress released, and fatigue having gone by the wayside—to join my family for dinner with a cathartic fresh outlook and a heady sense of well-being.

Bad day at work—I awoke far too early this morning and found myself badly overbooked in the office, running late, and feeling increasingly anxious. I was supposed to be at our new surgery center at noon for my very first case, but there was no way I was making it there on time. I had about thirty seconds to gulp lunch before driving—yes, I confess, above the speed limit—to the center several miles away. Upon returning to the office, I was called to the hospital operating room to do two very difficult surgical procedures. By this time it was almost 6:00pm. Problem: I was supposed to be in Manhattan at 6:30pm for a medical dinner meeting. I felt over-stressed, overwhelmed, overworked and overtired and was in a VERY unpleasant mood from my very unbalanced day. Fortunately, it was a lovely spring evening and I decided that I was not only unfit for my meeting but also could not deal with the rush-hour

commute into NYC. I knew, instead, what I had to do. I changed into my cycling clothes, pumped up my tires, and mounted my Trek road bike. It was late, so I did my quickie route—about 20 miles and very hilly. I channeled all my negative energy and vitriol into pumping away at the pedals as fast as I could. I really pushed it, and completed my course in record time, beating my previous best by about 30 seconds. When I returned home, I was drenched and winded, but transformed...I was human again.

“When you are totally immersed in the physical moment, there is no room left for ennui.”

Stephen Holden, film reviewer for *The New York Times*

I contend that we, as humans, have an amazing pharmacy within our own bodies, one that is capable of naturally manufacturing a significant portion of all the pharmaceuticals that we will ever need. Exercise is able to tap and manipulate our pharmacy within to release a symphony of chemicals that can help make us feel happy, alert, and alive. Simultaneous with our body sweating out “poisons” (sodium, chloride, potassium, uric acid, urea, ammonia, and lactic acid), our brains and glands are producing a whole cocktail of drugs, including hormones, neurotransmitters, etc. These may include *endorphins* (morphine-like chemicals with pain-relieving properties), *serotonin* (which may be responsible for causing heightened emotions and senses), *corticosteroids* (naturally-occurring anti-inflammatory hormones), and *phenylethylamine* (also found in chocolate and somewhat similar to amphetamines in terms of its ability to improve mood and ability to focus and purportedly released in the brain when people fall in love). At the same time, exercise causes levels of *adrenaline* (our stress hormone) to decrease.

While the specifics and reactions of the chemicals involved remain largely elusive, vigorous aerobic exercise can and

does for many people cause a “rush”-like sensation, heightened awareness, and a feeling akin to the infatuation state of a loving relationship! Internal chemical release may also be responsible for the improvement of joint pain in those suffering with arthritis, decrease in hot flashes in women going through menopause, and improvement in the symptoms of many chronic conditions and diseases. In a study at Ohio State University on the effects of exercise on wound healing, a group of exercisers and non-exercisers underwent a controlled skin injury via puncture. The results (published in the *Journal of Gerontology: Medical Science*), demonstrated that patients who exercised regularly healed significantly more rapidly than non-exercisers.

Exercise is an effective means of helping to manage depression without the use of medication. In fact, there are numerous depression treatment programs that incorporate an exercise program into their treatment regimens. I am generally a very happy and content human being; however, I readily confess to having some element of seasonal affective disorder (S.A.D.), in which I experience a true sense of melancholy during the winter months, feeling much happier in the spring and summer months when I thrive on sunlight and warmth. As I age, winter, with its cold weather and short days, has become increasingly distasteful. Leaving for work in the dark, coming home in the dark, and never seeing the light of day definitely adversely affects my mood. I find that there is no better recipe for seasonal affective disorder than a good dose of exercise, for me between 4:00pm and 5:00pm in the winter (if possible), probably correlating with sunset. Vigorous physical activity is simply a very effective means of combating any kind of negative mood issue.

When I found out that my father had prostate cancer, I was flabbergasted. Similarly, when I received the call from the laboratory that my wife was a carrier of the BRCA-1 gene

that is associated with a markedly increased risk of developing breast and ovarian cancer, I was in a state of shock, anxiety, and confusion. On both occasions, my immediate means of attempting to cope with these horrible medical reports was to put on my running shoes and go for a long, slow jog. I was literally drawn to run, almost by an external force, running not being my primary form of exercise at those times. Not music-inspired, happy running, but angst-inspired physical exertion, allowing me time to ruminate, mull, and contemplate—somehow, this meditative, physical exercise helped me deal with the psychological issues at hand. Under similar circumstances, some people might choose to speak to their priest, rabbi, or other support-type person, but I found consolation by finding my running shoes—fitness and exercise being my “religion” on many levels.

So what I am saying is that exercise actually IS the drug *Norvasc* (lowers blood pressure), and *Lipitor* (lowers cholesterol), and *Aspirin* (helps prevent untoward cardiovascular events), and *Lexipro* (helps manage anxiety and depression) and *Viagra* (helps manage erectile dysfunction) and then some...and then some! To hell with anabolic steroids, it is *exercise* that is my performance-enhancing drug! If the benefits of exercise could be incorporated into a pill, it would be a *blockbuster* for any pharmaceutical company! As the MasterCard commercial states: *it is priceless.*

In summary, the short-term positive effects of exercise are the psychological and physical benefits of stress busting, improvement of mood, fatigue reduction, and increase of energy. What about the long-term benefits? These include reduction in risk for diabetes, cardiovascular diseases, stroke, hypertension, some cancers, osteoporosis, chronic medical problems, falls, and physical disability. An exercise regimen is also useful for increasing muscular strength and tone, reducing body fat, and

helping with weight control. Exercise and its resultant weight reduction will help lower blood pressure, total cholesterol and “bad” cholesterol (LDL), and raise “good” cholesterol (HDL). Biological aging is thought to be partly on the basis of oxidative stress, which is reduced by exercise, so exercise can keep us looking and acting youthful.

“Those who think they have no time for bodily exercise will sooner or later have to find time for illness.”

Edward Stanley, *The Conduct of Life*

Exercise affords a great opportunity for camaraderie, whether it is playing team sports, jogging with a friend, cycling with your buddies, playing tennis, or doing a spinning class at the local spa. Exercising with someone or in a group is a great motivational tool. As I’ve mentioned, for example, I am a cycling enthusiast and like to go out biking with five or six friends on a regular basis. I am happy to see that cycling has seen an explosive growth in popularity and has been embraced by the baby boomer generation. It is a great low-impact form of aerobic exercise that is actually a whole lot easier on aging knees than cartilage-corroding sports like running, tennis, basketball, and soccer.

It is wonderful, if conceivable, to exercise in a group setting. For example, tremendous benefits accrue from cycling with a group as opposed to cycling solo. First of all, the group motivates and provides positive incentives for the individual. The healthy competition stokes your energy and pushes your performance way beyond what you could accomplish alone. As a result of *drafting*, in which the lead rider breaks the wind resistance and the other cyclists ride close behind in a single file pace line, much faster speeds with significant energy expenditure savings can be accomplished versus riding alone. It is also much safer to ride in a group in which everybody looks out for

everybody else and there are open lines of communication concerning obstacles. Second, you invariably learn from other members of the group. This kind of social exercise is really enjoyable and is also much safer than cycling alone. As a result of the “group effect,” I have been motivated to do century rides (100 miles) and even, on occasion have been known to venture out cycling in the most inclement of weather conditions! The same applies to many athletic activities that you can do with friends. I have made very good friends with my bike and have found that the stresses and anxieties of life are readily transferred through my bike frame, into my tires, and out onto the road.

Being outside and exercising is a whole lot more fun than working out inside, which I usually reserve for inclement weather or when I do not have the time for a prolonged effort. For example, I recently did forty miles of early morning cycling with my biking buddies. It was an almost painless means of achieving an excellent aerobic workout. The soon to be summer weather was fabulous, the terrain rolling by was visually stimulating, the sweet fragrances of late spring, particularly honeysuckle (my absolute favorite aroma), were enticing, and the iPod on with the earpiece in one ear cranked out motivational music to pace by. All in all, it was an exhilarating spiritual experience, confirmation that I get most connected to my sense of spirituality when I’m in the outside world of nature. It reinforced to me that fitness is my religion—my ‘synagogue’ is the outside world illuminated by the sun stimulating all my senses, my ‘yarmulke’ is my helmet, my ‘talit’ is my cycling jersey, and my ‘sacred wine’ is my sports drink!

“I never miss my workout...and I hate it, but I like the results. You’ve got to use your mind and body every day. You’ve got to sacrifice. It’s use it or lose it. Anything in life that’s meaningful, you’ve got to work at it.”

Jack LaLanne

It is not always easy to find motivation to exercise, nor to stay motivated during the act of exercising—it takes effort and the knowledge that the end will justify the means. It is easy to become complacent and lazy and so simple to come up with excuses for not exercising, particularly when you are tired or not in the mood. Fact: After a long, hectic day at work, it takes a great deal more effort to try to achieve a serene state by going out to the gym than it does to nix the workout and have a glass of wine or beer, a nice dinner, and a “couch potato” evening. That’s why, for a busy individual, having a home gym can be a wonderful convenience—it provides no reason for any excuses! You can even make it a family affair. When I exercise in my basement gym, I am often accompanied (to my delight), by my eight-year-old daughter (she’s very motivated!) and her friends, whom I allow to use my machines under my supervision. My sixteen-year-old daughter would not allow herself to be caught exercising with me (after all, she’s a teenager!); however, I am happy to say that she pays attention to what she eats and is active in several sports. I like to think that I am setting a good example for my children.

Frankly, at the end of a long, hard day, I am often not up for physical exertion and for this reason it is ideal, if possible, to get a workout in first thing in the morning before heading out to your job. In general, more focus is brought to a morning workout as opposed to an afternoon or evening workout and, as such, the more likely it is that results will occur faster. If you are so fortunate as to be able to carve out the time for consistent morning workouts, you will likely not bring the fatigue and stress to the workouts that you would to an afternoon or evening session.

Of course, a morning workout is not always feasible for those, like me, who need to be at work very early. However, when I am able to get in an early a.m. workout, *nothing*

feels better—after a shower and a mug of robust coffee, I am rendered in such a state of elation and positive energy that my most problematic and difficult patients almost seem to be a pleasure to deal with! It comes down to the fact that you simply need to carve out the time to exercise and then “*just do it*” (like the Nike advertisement states), whenever and wherever you can!

“Not to decide is to decide.”

Harvey Cox

“Failure is the path of least persistence.”

Anonymous

When I find myself in a lazy and idle mood, lacking the motivation and conviction to work out and in search of excuses for not exercising, I literally force myself to get physical—mind over body, if you will—and always feel the better for it. However, I do not advise exercising late in the evening since the stimulatory effect can definitely negatively impact your ability to get to sleep! I’ve basically learned *not* to defer working out until after dinner, because you will feel sluggish after eating, plus it is smart to wait an hour or so to digest your meal before pursuing a workout (which makes it even more difficult to “hit the machines”). It truly is much easier to simply delay dinner, get in a solid workout, shower, and then have your evening meal in a peaceful, quiet fashion, with the rest of the evening free to relax, feel good, and enjoy a truly blissful night’s sleep!

On occasion, while working out I can’t seem to find motivation to continue; for example, while running on the treadmill, I sometimes get the urge to slow down to a walk or stop completely. At such times, I find it very helpful to employ a few motivational thoughts to work through the boredom or monotony that is being experienced. I find inspiration for exercising by thinking of my father after

his total knee replacement, who was unable to do much physical activity at all during a tough rehabilitation. I think of all the ill people in the world who cannot walk, such as the spinal cord injury patients I see in my urology practice, or of some of my patients who are so much less fortunate than myself as they suffer with various conditions or diseases, yet who have attitudes that soar high in the altitudes. I think, for example, of my patient A.B. (*and I'm not making this up!*):

He is a married 33-year-old man who has two children. When he was 24, he was diagnosed with testicular cancer and underwent removal of a testicle. He was found to have metastatic disease in his abdomen and chest that required intensive chemotherapy. Despite this aggressive treatment, the cancer reoccurred in his abdomen, chest and brain, requiring removal of both kidneys, a segment of his intestine, a slice of his lung, and a hunk of his brain as well. Recovery was long, painful and arduous. Then, a recurrent cancer in his neck required removal and a tracheostomy for a while, although eventually the hole in his neck was able to be repaired. He has been maintained on dialysis 3 times per week since the removal of his kidneys in 1999.

I first met him in 2003 after all of the above unfortunate occurrences. He came to see me because of an enlarging mass in his solitary testicle. This, of course, necessitated surgical removal; fortunately, the pathology was benign. He needed to be placed on testosterone replacement at that time, since both testicles were now gone. In 2005, his parathyroid glands required removal and, while recuperating, he sustained a fall, causing him to fracture several bones and remain hospitalized for forty days. In 2006, an arterio-venous fistula in his arm clotted off, forcing him to undergo dialysis via a special catheter placed in one of his veins.

YET...despite all this, he always shows up to my office chipper and smiling. I ask him how he does it, and he replies that he takes one day at a time and looks forward with great anticipation to the arrival of every new day. He delights in life's simplest pleasures. He anxiously awaits his son's upcoming communion and his brother-in-law's wedding. All I can say is, WOW!—this guy has the most amazing attitude. If I had been dealt a fraction of the cards that he was dealt, I would probably have put myself out of my misery—no kidding! Think of this story whenever you need some motivation.

I like to exercise every day if possible—that's right, every single day. After all, exercise is fundamental for *quality* and *quantity* of life. We carve out the time to eat every day, we carve out the time to work every day, we carve out the time to brush our teeth and bathe, we carve out the time to sleep—so, we should carve out the time for physical activity every day! We are human beings who are programmed for mental, physical, and emotional stimulation; physical activity is a quintessential human endeavor, of paramount importance to our health, well-being, and longevity. Like our pet dogs, we are meant to be let out in the yard to play, to run, to banter about.

Once you have established a routine and have allotted the time to exercise on a regular basis, the key is to persevere and not to allow complacency to interfere with your regimen. Once you are cruising along, having integrated daily exercising into your lifestyle, it becomes so much easier to maintain this schedule than to stop and then start up again! It is an amazing fact to me that the Tour de France cyclists, arguably the most fit aerobic athletes in the world, generally engage in a three hour or so ride on their *rest* day! Why so? Simply because too little activity on rest day would lead to a sluggish performance on the following day, a potential disastrous occurrence in a grueling three week marathon covering

2,272 miles of terrain, including the daunting mountains of the Pyrenees and the Alps.

“It is easier to maintain good health through proper exercise, diet, and emotional balance than to regain it once it is lost.”

Dr. Kenneth Cooper

Minimal acceptable exercise for me is a less than one-hour commitment (including a quick shower), consisting of 30 minutes of sweat-inducing, aerobic, cardiovascular exercise plus some core strength and resistance exercise. There are, of course, some days when I, unfortunately, cannot commit because of work or other constraints, but these days are few and far between and if I am going to work out, I make sure I complete at least my minimum. Granted, this is *not* a lot of exercise and I usually do this routine after getting home from a full day at the office, typically between 6:00 p.m. and 7:00 p.m. So why bother engaging in this small dose of exercise? First of all, between the sweat-inducing exercise and the refreshing shower, it is a terrific transition between my work life and home life, which leaves me feeling energized and revitalized. Secondly, any amount of exercise is *money in the bank* (more about this later). Thirdly, this smidgeon of exercise is enough to maintain exercise *momentum*—keeping the exercise juggernaut rolling, so to speak. Of course, my minimum need not be your minimum; ideally, though, most people should aim for at least 30 minutes of aerobic exercise most days of the week and 20-30 minutes of strength training two or three times per week, with some flexibility and stretching exercises as well.

However, *any* amount of exercise is better than *no* exercise, so even if you can only get in 10 minutes, it sure beats sitting on the couch eating chips! You certainly do not always need to do intensive exercise; it is a nice concept to shake it up and vary the routine. Sometimes, instead

of sitting on my derriere to watch a Sunday football game, I will get on the treadmill at a comfortable 3.5 mile-per-hour pace, dial in some degree of inclination, and walk for 60 minutes while I am watching the game. I barely notice that I have walked 3-4 miles up a hill, having been absorbed focusing on the screen. This does not replace intensive exercise for me, but is a supplement to it, and I often do this after having already played tennis or having cycled. When I have some sort of injury and do not feel up for major exertional exercise, such walking up a hill for an hour on the treadmill will provide me with a means of being active even when I am “down.”

While exercise can induce injury (particularly if done incorrectly), it may, in fact, improve minor musculoskeletal aches and pains and can actually serve to prevent injuries. That’s right!—use your muscles, bones, tendons, and ligaments and minor pulls, tendonitis, bursitis, arthritis, almost any kind of *itis* (inflammatory process), can get better! This is not to say that you can or should exercise through a major injury. It is important to pay attention to what your body is telling you—it is a smart, sophisticated, well-engineered machine that will readily let you know what your true limitations are.

I have been lucky over the years, never having experienced a major sports or athletic injury, aside from a fractured wrist at age 15 from a bad fall while playing football and a hairline skull fracture and concussion as a result of a fall off my bicycle in the days when protective helmets were non-existent. I *have* experienced a series of minor, slowly-resolving “nuisance” injuries, including *ilio-tibial band syndrome*, *plantar fasciitis* and *Achilles tendonitis* from running, *tennis elbow*, and a host of aches and pains resulting from such things as pulled calf and thigh muscles. I have always tried to “work through” most of these pains; if an injury has not been too disabling, I’ve tried not to let it disrupt my routine. A most remarkable

phenomenon usually occurs—after about ten minutes or so of aerobic, sweat-inducing exertion, the pain often gets better or disappears! Whether this is related to endorphin release, the stretching coincident with exercise, or something else, I am not sure, but it is a certainty that exercise can help alleviate pain. Obviously, if the exercise exacerbates the pain, one should stop immediately and seek appropriate medical treatment.

*“If I’m going to have a health issue, I’d rather it be
orthopedic in nature than cardiac.”*

John McGowan

The baby boomer generation—78 million strong—born between 1946 and 1964, of which I am a member (falling smack in the middle), is the first generation that grew up exercising on a regular basis, with the workout facility becoming a “cultural icon” for us. We are hopefully driven to exercise in order to maintain our health and well-being; but, if truth be told, also by our vanity and desire to pursue our fountain of youth. We want to feel young, look young, and try to live for as long and as well as we possibly can! A new term—*boomeritis*—has been coined and applies to the musculoskeletal ills resulting from exercising our aging bodies, something that has been a boon to the orthopedic surgeon specializing in sports injuries. Musculoskeletal injuries are now the top reason for seeing a physician. Yet, we persevere because we are unwilling to allow injuries to compromise our pathway to the fountain of youth.

I am not a marathon runner, a professional cyclist, nor have I ever participated in an Ironman competition. I am by no means an elite athlete and am not particularly fast or muscular! But I am imbued with “uber-enthusiasm” and the commitment, perseverance, self-motivation, and tenacity necessary to pursue and maintain a successful fitness regimen. In fact, the quintessential element in the achievement of fitness is not the specific technique, but

the right *attitude*. A successful exercise regimen that stands the test of time is predicated upon this powerful, internal motivating force that comes from deep within—a force similar to the hunger that motivates us to eat. The physical, mental, and spiritual benefits that accrue from exercise further enhance this deep-seated inner drive, empowering this *mojo* even more, and making the quest for fitness natural and easy! To be successful in terms of fitness, one must think long-term and pursue exercise as a means of achieving health, NOT to simply look better (although that certainly can be a bonus feature).

“The unbelievers, who exercise out of a sense of guilt, vanity or the desire to achieve short-term goals, inevitably fail. Without inner conviction, the discipline necessary to continue flags. But believers never tire of the journey because they know and have experienced the life-giving benefits of exercise.”

Ray Kybartas

I am interested in eking out as many years as I possibly can on this planet; however, not just quantity of years, but with quality in mind, while maintaining my “youth” for as long as conceivable. And when I refer to youth, I mean not only *looking* young, but also *feeling* young and maintaining a youthful *attitude*. I have recognized the importance of exercise and fitness as being the fundamental cornerstone in achieving this goal, as well as according all of the short-term and long-term benefits discussed earlier.

It is important to fully understand what it is that constitutes true fitness. In simplistic terms, there are three components to fitness: *cardiovascular*, *muscular*, and *flexibility*. *Cardiovascular fitness* results from aerobic activities, including running, cycling, swimming, jumping rope, etc. *Aerobic* implies that the exercise will increase the body’s use of oxygen. Essentially, this translates into

having a fit heart, lungs, and muscles. The goal of cardiovascular fitness is to exercise the heart muscle to make it strong and well-conditioned—in so doing, the heart rate and the volume of blood pumped with each stroke will increase and the blood flow to the coronary vessels (those blood vessels that provide the heart muscle with blood), will increase and the blood flow to the arteries that supply the rest of the body will also increase. Continued aerobic exercise will augment the efficient utilization of oxygen by every organ in our bodies. From an exercise physiology perspective, aerobic training will cause an adaptation of muscle fibers (muscle cells) in terms of an increase in the volume and density of mitochondria (organelles within cells responsible for generating energy-releasing adenosine triphosphate, or ATP), oxidative enzymes (the specific proteins that are involved in the metabolic process), and capillary density (the concentration of the small blood vessels within the muscle). Regular aerobic exercise will counter all of the risk factors that increase the risk for coronary artery disease including elevated cholesterol, high blood pressure, obesity, diabetes, and excessive stress.

Recently, oxygen bars have come into vogue. Instead of hitting the machines or the pavement, simply sit at a bar and inhale a blast of good old oxygen...then reap the benefits! What?? Who are they kidding?? I'll give you the best—the only true oxygen bar available—it's called aerobic exercise. Oxygen-rich blood will be readily delivered to every cell in your body! Remember, there are no shortcuts!

The second component to fitness is *muscular fitness*, which derives from working our muscles against resistance. Essentially, this amounts to increased muscle mass, strength, and endurance that can be achieved by using free weights, weight machines, or even working against the resistance of your own body (push-ups, pull-ups, chin-ups, etc.). In general, heavier weights with fewer

repetitions results in greater *strength*, whereas lighter weights with more repetitions results in greater *endurance*. The adaptation of muscle fibers to resistance exercise is *hypertrophy*—an increase in the **size** of the muscle cell—although studies have provided evidence that *hyperplasia*—an increase in the **number** of muscle cells—may also occur. The process of muscle hypertrophy and hyperplasia is contingent upon subjecting muscle fibers to *tension overload* that naturally induces injury, followed by a normal regenerative period. This is why one often complains of sore muscles following a vigorous resistance workout. However, this general soreness is a good thing, meaning that the muscles have been effectively exercised against resistance (intense pain is another story, and may mean that the workout has been too vigorous).

Core muscle training has emerged as a vitally important component of strength training. The core muscles consist of an interconnected web of muscles comprised of your abdominals, back, hips, and gluteals—including the *transversus abdominus*, the *rectus abdominus*, the *internal* and *external obliques*, the spinal muscles known as the *erector spinae*, the diaphragm muscles including the *intercostals*, as well as the *iliopsoas*, all of which are our foundation for movement. These core muscles help maintain our posture, stabilize our trunk, promote balance, and support and protect many of our internal organs. Additionally, the core muscles essentially connect our upper extremity to our lower extremity, facilitating coordination between our arms and legs, so that each can benefit from the movement of the other. By strengthening these core muscles, we maximize their function.

The third component of fitness is *flexibility*, which comes from such pursuits as stretching, yoga, and pilates. Under the heading of flexibility, I would also include *balance* and *posture* exercises. Flexibility training is useful for preventing injury and maximizing athletic performance,

as well as providing for a wider range of motion in the joints. I confess to being seriously remiss and neglectful in this department, not having had the patience to pursue flexibility work until recently, which may help explain my myriad of minor musculoskeletal issues over the years. In fact, degree of flexibility has been shown to be inversely proportional for the potential for injury. Last year's New Year's resolution was to undertake pilates and yoga classes to help develop flexibility, balance, and strength. After taking several yoga and pilates classes, it would appear that I am an extremely physically inflexible human being! My core strength is excellent, but as I gaze around the room, seeing many women easily touch their palms to the ground while bending at the waist, I struggle to simply touch the floor with my fingertips! I am *hamstrung by my hamstrings*, so to speak! I vow to continue working with determination on flexibility and joint mobility. A good stretching program should include all the major muscle groups and should be done both before and after physical activity. For a wonderful, highly- detailed and beautifully-illustrated guide to stretching, the reader is referred to *Stretching Anatomy*, by Arnold Nelson and Jouko Kokkonen, Human Kinetics Press (2007).

In assessing fitness regimens, it becomes clear that men generally would benefit from more flexibility training while women from more strength training. One thing is certain: by balancing cardiovascular, strength, and flexibility training, you will maximize your ability to achieve fitness, reduce your risk of injury, and feel better about yourself.

So, although balanced fitness is a goal, it is my thinking that cardiovascular exercise always trumps muscular strength training—and if I am severely restricted in time, I would always rather pursue *aerobic* (cardiac) exercise versus *anaerobic* (strength training) exercise. Both cardiovascular exercise and strength training are important to fitness, but I consider the most important

muscle in the body to be the heart muscle, without which, consideration for strength training becomes a moot point! I would much rather be fit in cardiac terms with average musculature than a big, hulky, Neanderthal-appearing individual who could not walk up a flight of stairs without huffing and puffing! My goal for strength training is a lean, svelte, athletic shape—it seems that I am not alone in this pursuit, as the once “different” look of the retro 1970s rock star body (a.k.a., the *yoga* look or the *Jesus* look), has now come into vogue. To this end, I do not lift a lot of heavy weights, but often work out against my own resistance, doing exercises including push-ups, pull-ups, dips, dumb bells, crunches, etc. Aside from their obvious health benefits, I consider these exercises “practical,” since, for example, you never know when you may find yourself hanging off the ledge of a building needing to pull yourself up; they replicate some situations that you may possibly find yourself getting into! I make every effort to do slow and controlled movements with coordinated respiratory inspiration and expiration.

In terms of balanced fitness, many people who have experienced exercise-induced injuries are pursuing more gentle and mindful alternatives. My cousin, Nora Isaacs, is a freelance writer who specializes in health, yoga, wellness, and spirituality (please check out her web site: www.noraisaacs.com). She recently published, *Women in Overdrive—Find Balance and Overcome Burnout at Any Age*. She is of the opinion that *true* fitness transcends cardiovascular capacity, a toned physique, and a low body mass index, but must also encompass a feeling of *wellness, balance, engagement, tranquility, and connection*. In addition to a streamlined appearance and maintaining a good weight, an important goal of fitness is *feeling* healthy and avoiding injuries. Mind/body modalities, including yoga, pilates, and tai chi, are increasingly popular means of achieving such goals. Increasingly accessible in health clubs, easy on the joints, and capable of totally engaging

the participant (as opposed to exercises that are facilitated by distraction techniques including iPods and television), these techniques are a wonderful addition to the more conventional routines of aerobic exercise and weight training. The transformative ability of yoga, pilates, and tai chi can extend way beyond the time spent in class, improving one's ability to enjoy what life has to offer and facilitating awareness of and engagement in the present moment.

So, what is the right fitness regimen for you? Anything you like, I say—as long as it has an aerobic component that gets your heart pumping, your lungs expanding, and your sweat glands secreting. When I work out in my basement, I enjoy the treadmill, the exercise bicycle, and the versa climber. When I am traveling and use a hotel's workout facility, I will shake it up a bit and use a recumbent bike, the elliptical cross trainer, the Stair Master, etc. When I am outside, I enjoy running, cycling with my road, mountain or tandem bikes, tennis, and in-line skating. When I play golf, I *always* walk the course if possible. There are numerous means of obtaining cardiovascular exercise—whether it is swimming, tennis, racquetball, jumping rope, kayaking, rowing, trekking the Himalayas, cross-country skiing, ice skating, team sports such as soccer, basketball, volleyball or hockey, aerobics class, spin class, kick-boxing or pilates, tai chi, martial arts training, salsa or belly dancing, gymnastics, or ballet—it does not matter. Playing the new video game—Nintendo's WiiFit—is another option to get you moving and off your backside. What does matter is that you find some activities that you like and that you stick with them!

I like the concept of balance, mixing it up a bit for variety, fun, and cross-training purposes. How long should a session of aerobic exercise last? I believe that 30 minutes should be considered a minimal workout, but understand that even 10 minutes is certainly better than no minutes

at all. I like to get in at least a 45-minute session if possible. Each aerobic activity has a varying level of *impact*, that is, how much stress that activity places on your joints. For example, running is high impact versus swimming, which is zero impact. People with injuries, arthritis, back issues, etc., will find that the lower-impact activities are less likely to exacerbate their problem(s).

It is a prudent idea to monitor your heart rate during aerobic activity, because in order to achieve your fitness goals you need to exercise at the proper intensity. A heart rate monitor, a device that continuously tracks your heart rate, can be purchased inexpensively at any sporting goods store. It consists of a transmitter strap that fits around your chest and a wrist watch. The transmitter picks up the signals of your heart and sends them wirelessly to the watch. Your heart rate will give you an accurate measurement of the intensity of your exercise. In addition to helping pace you, it is a useful tool for measuring your improvement in fitness, which accrues by continuing your exercise. As you get more and more fit, you will notice that your recovery time to your baseline (i.e., beginning) heart rate after stopping exercising gets faster and faster.

With a heart rate monitor, you can ensure that you're exercising at the right intensity—it gives you assurance that you are exercising in the proper *target zone*. These target zones will help guide you to the proper exercise intensity. A target zone is a high and low heart rate range that is based upon a percentage of your maximum heart rate. You can use a formula based on your age: maximum heart rate = 220 minus your age in years, or alternatively, you can figure out your maximum heart rate by measuring your heart rate at maximal exercise intensity. In general, 60-70% of your maximum heart rate is good for weight loss while 70-85% is more appropriate for cardiovascular fitness. I don't particularly like wearing the strap because I find it a little irritating to my skin and somewhat annoying,

but it sure does give you some valuable information, especially when you are starting out. If you don't like the chest strap, you can purchase a special tee shirt that has built-in sensors, eliminating the need for the strap (www.adidas-polar.com). There are now available monitor wrist watches that sense your pulse rate as well as display it, also eliminating the need for the chest strap.

I did an interesting experiment with the help of Isabelle, my eight year old daughter. I put on the heart rate monitor and had her record my resting heart rate, after which I started on the treadmill. I had her then record my heart rate at every speed between 3 and 10 miles per hour (mph). This gave me a very good idea of the right speed to run at in order to achieve the correct exercise intensity. Since I am 52 years of age, my theoretical maximal heart rate should be 220 minus my age, or 168 beats per minute (bpm), although my maximal heart rate tested while cycling and running is 161. This is how it panned out:

| Treadmill speed (mph) | My heart rate (bpm) | % of maximum heart rate |
|-----------------------|---------------------|-------------------------|
| 3.0 | 80 | 47 |
| 3.5 | 84 | 49 |
| 4.0 | 93 | 55 |
| 5.0 | 110 | 65 |
| 6.0 | 119 | 70 |
| 6.5 | 126 | 74 |
| 7.0 | 131 | 77 |
| 7.5 | 137 | 80 |
| 8.0 | 140 | 82 |
| 8.5 | 146 | 86 |
| 9.0 | 152 | 89 |
| 9.5 | 154 | 91 |
| 10.0 | 156 | 92 |

Analyzing the above information will conclude that my “weight loss” speed is 5-6 mph, whereas my cardiovascular fitness speed is 6-8.5 mph.

It is very important to ease into aerobic exercise! I get on the treadmill and walk for a minute at 3 mph, then a minute at 3.5 mph, and then a minute at 4 mph. This warm-up is important in terms of stretching out, preventing injury, psyching yourself up for the run, and getting the blood flowing and the lungs moving air more rapidly (augmented heart and respiratory rates), before pushing up to the higher levels. I then do a slow jog at 5 mph for a few minutes and then gradually crank up to a cruising speed of between 7 and 8 mph depending on how I feel, at which I run 3-5 miles.

Interval training is an important component of cardiovascular exercise in order to increase your aerobic capabilities. Essentially, it amounts to cranking up the intensity for a portion of the aerobic endeavor so that intense physical activity is alternated with periods of relaxing physical activity. Doing such *bursts* of intense exercise improves cardiovascular fitness as well as your ability to burn fat. The intense phase should make you out of breath, get your pulse up to 80-85% maximum, and should last from 1-4 minutes. The recovery period should not last so long that your pulse rate returns to resting. Remember to be well warmed up before starting the intense phase and to not engage in increments training more than every other day to allow for proper recovery.

I usually pursue interval training towards the middle to the end of the run. On the treadmill, this translates into spending some time pushing yourself beyond comfortable cruising speed. I will ramp up the speed in 0.5 mph increments for one minute at a time—8.0 then 8.5 then 9.0 then 9.5 then 10.0 mph, slowing down to cruising speed (6.0-7.0 mph) for a minute between each intense interval. This interval training really gets your legs moving, your heart pumping, and your lungs moving a lot of air, which is exactly what you want. I find that listening to some good crescendo music and pacing myself to the music

helps considerably with the intervals! When I am done, I *cool down* by walking for another mile or so. It is important not to end exercise abruptly in order to avoid cramps and injury. The same is true with other forms of exercise—transition in gradually; always warm up and stretch a bit before you start, and cool down before you stop! Interval training is a great way to shake things up and allows no time for boredom.

My son, Jeffrey was home from college for the weekend. He has not yet discovered the magic and allure of exercise, but he is active. He does quite a bit of walking and on occasion will play basketball with his friends, or tennis or golf with me. But he does not get aerobic exercise on a regular basis. I borrowed him for a treadmill test, in similar fashion to how I was tested. Since he is in his early 20s, his maximum heart rate should theoretically be 220 minus his age, or about 200. This is how it panned out:

| Treadmill speed (mph) | Jeffrey's heart rate (bpm) | % of maximum heart rate |
|-----------------------|----------------------------|-------------------------|
| 3.0 | 133 | 67 |
| 3.5 | 139 | 70 |
| 4.0 | 145 | 73 |
| 5.0 | 165 | 83 |
| 6.0 | 176 | 88 |
| 6.5 | 187 | 94 |
| 7.0 | 192 | 96 |
| 7.5 | 195 | 98 |
| 8.0 | 200 | 100 |

An analysis of the above information indicates that Jeffrey's "weight loss" speed is 3-3.5 mph, whereas his cardiovascular fitness speed is 3.5-5.5 mph. My conclusion is that, despite the fact that Jeffrey is young and not carrying excess weight, he could be doing better in terms of cardiovascular fitness and that it would behoove him to start logging some aerobic time (of course, try to tell your children anything)!

Practice “safe exercise”! If you have been sedentary for many years or are overweight, and wish to start an exercise program, it would be prudent to first see your medical doctor. A thorough physical and laboratory examination are in order to ensure that all cardiac risk factors including high blood pressure, elevated cholesterol, diabetes, etc., are under control prior to engaging in an exercise regimen. Your internist will probably recommend a cardiac stress test as well. Once you start training, do it in a sensible fashion with a plan in mind. Wearing a cardiac monitor is an excellent idea to ensure exercising at the proper intensity. Of course, heed any warning signs such as palpitations, chest pain, discomfort, or pressure, dizziness or light-headedness, shortness of breath or nausea as these may be a sign of a potentially serious cardiac situation.

Any fitness routine carries with it certain “no brainers.” Make sure you keep yourself well hydrated! I keep a mini-fridge in my exercise area and always have a bottle of cold water handy. When you are exercising outside, try to avoid temperature extremes! It really is not fun, nor particularly beneficial, to run or cycle outside when the temperature is below 30 degrees! Likewise, be careful on extremely hot summer days, although I must say that I get some degree of inexplicable, perhaps masochistic, satisfaction and pleasure cycling on an extremely hot and humid day, when I see very few other cyclists on the road and I come back drenched in sweat. When it is extremely hot out, the “thermal stress” causes a diversion of blood flow away from the muscles to the skin to enhance heat release via sweating. As a result of less blood flow to the muscles, performance can suffer or heat exhaustion can occur. Similarly, high humidity days are problematic as the increased humidity makes it more difficult for sweat to evaporate. This forces the diversion of even more blood flow to the skin to promote heat removal via sweating. As a result, with less blood flow to the muscles, decreased

performance or exhaustion may result. Core temperature, if beyond a certain range, can adversely affect performance and is potentially a very dangerous situation that can lead to heat prostration. Working muscles generate a great deal of heat and our bodies dissipate this heat through the act of sweating. Our cooling mechanism involves increased blood flow to the skin which carries core heat to the surface, released as sweat evaporates from the skin. Vigorous hydration is essential for providing the water for this process. The cooling process can be supplemented with pouring water on the head and body, if necessary. The more air flow there is, the greater the potential for rapid heat dissipation—thus the logic of wearing the clothing that will best promote heat loss. Current fabrics designed for many sports are designed for evaporative cooling and wicking of heat and sweat out to the environment, so make sure you are properly dressed!

Recently, “sauna suits,” plastic heat-retaining sweatsuits that have been used for years by boxers to shed pounds for weigh-ins, have become popular as a means of facilitating weight loss. These suits are not a good idea—wearers risk dehydration and heat stroke—and this “shortcut” in terms of weight loss is lost once rehydration occurs. Remember, there is no quick fix for weight loss—weight accumulates slowly and needs to be shed slowly!

Pay attention to the pollution index if you live in urban areas—carbon monoxide will decrease the oxygen carrying capacity of blood. Ozone, nitrogen dioxide, sulfur dioxide, and particulate matter can potentially inflame our air passages and induce asthma attacks. If you have allergies, be wary of high pollen count days. Use sunscreen and sun-blocking lip balm generously! However, be aware that sun block adds a mechanical barrier to the evaporation of sweat. With less efficient sweating, more blood flow is diverted to the skin, potentially decreasing performance or promoting exhaustion. Dress appropriately! Wear high-

quality athletic shoes that buffer your joints from the stresses of impact. Wear bright colors so you don't get plowed down by an SUV!

If you are going to engage in endurance training including long-distance cycling, running, or swimming, it is imperative to eat properly, maintain hydration, and refuel periodically to avoid depleting energy stores, dehydration, and heat stress. Carbohydrates are the primary fuel for endurance endeavors. Since carbohydrate storage is limited and supplies can be rapidly depleted within several hours or so, it is important to refuel with energy bars, energy gels, fruits including bananas and oranges, or sports drinks. Sports drinks will also help replete electrolytes lost through sweating that will help prevent muscle cramps. When I cycle, I generally bring a large bottle of water and a large bottle of my favorite energy sports drink, orange-flavored Accelerade, for starters. After an endurance event, it is important to recover by replenishing carbohydrate stores. It seems that the body is most efficient at repleting carbohydrates in the first hour or so after the event, and a small amount of protein added to the carbohydrate source seems to facilitate absorption of carbohydrates by muscles.

And now, for a bit of historical perspective concerning the evolution of the fitness movement:

German-American immigrants brought to many American communities the *Turnverein*—the athletic club—organized gymnastic, calisthenics, bowling, and other athletic endeavors. These facilities were established in Cincinnati and New York City in 1848, and in Texas three years later. In 1880, Turnvereins made their primary goal that of introducing physical training in all American schools. In the 1890s, social reformers launched the *playground movement*, enticing USA cities to build safe public recreation areas that lead to the construction of gymnasiums, fieldhouses, and swimming ponds.

Jack LaLanne opened the first modern health studio in California in 1935! He also is responsible for developing the first prototypes of exercise equipment, including leg extension machines, pulley machines using cables, and weight selectors. In 1958, President Eisenhower founded the “President’s Council on Physical Fitness and Sports” that was later popularized by President Kennedy. In the 1970s, Dr. Kenneth Cooper formulated *aerobics*, the concept of increasing cardiovascular capacity by running long distances relatively slowly. With the emergence of exercise physiology, the science of exercise was born.

Currently, 40 million Americans belong to some kind of fitness club—this number was only 17 million in 1987! People 35 to 54 years old account for 33% of all fitness club members; the over 55-year-old contingency comprises another 25% and is the fastest growing demographic. Truth is, though, you don’t need expensive equipment to exercise. No fitness club membership is necessary to maintain your fitness! No personal trainer or aerobics instructor is required! But do remember, avoid gimmicks that you see advertised on infomercials that sound too good to be true and remember that there are no shortcuts to the pathway towards achieving fitness. You can now access on the internet or cable television a whole variety of exercise classes that can be done at home, on your time, including spinning, pilates, dance aerobics, etc. My wife, Leslie, regularly exercises at home using these remote classes accessed via television.

Recently, there has been a lot of hubbub about the concept of *integrative* exercise. This is simply a clever name that has been applied to what many people have been practicing for years—an informal means of exercise that is incorporated into your daily activities. *Remember, at one time, all exercise was integrative!* An article in the *Journal of the American Medical Association* dated July 12, 2006 proved that *simply expending energy through ANY activity*

will confer survival advantages and a lower risk of mortality. When I was a urology resident in Philadelphia, I integrated exercise into my daily routine by jogging from Pennsylvania Hospital on 8th and Spruce to the Hospital of the University of Pennsylvania on 34th and Spruce Street (26 city blocks or just over a mile), to attend a urology-radiology conference; this was, of course, much to the dismay of my Attending Physician, who did not appreciate my showing up to the meeting in sweaty scrubs!

Nowadays, I do integrative exercise every day of my life. While at work at my office, I always try to take the stairs instead of the elevator (even up the seven floors), as much because I can't strand waiting for the elevator as to get some exercise! Instead of using the electric doors to enter the hospital, I use my biceps to manually open the doors. When at an airport, I like to walk up the stairs instead of using the escalator, walk to the gates instead of using the "people conveyor," and pull my family's luggage instead of using a porter. The key to integrating exercise into your daily routine is to always incorporate movement into your activities—it has even been shown that being fidgety (I have been described as having *shpilkes*, the Yiddish equivalent of "ants in your pants"), is a form of exercise that burns away the calories in the form of nervous energy. My wife often resents me for this one (particularly when it's cold or raining), but I always park the car as far away from the shops at the mall as I possibly can and walk the distance, not circling around incessantly looking for that close-to-the-door "Christmas spot." I never valet park my car if self-parking is available as it is a convenience that I personally detest—I view it as an insult to my health and wellness! When I am too ill to park my car myself and walk a couple of blocks, then I will valet! I must credit my wife with her ability to power vacuum, in which she works up a good sweat and gets good aerobic as well as strength-training benefits. Leslie also informs me that by mixing batter for a cake by hand as opposed to using an electric

mixer, you will be able to build nice “cuts” in the upper arms—in fact, people ask her if she weight trains in the gym and her answer is “no, I work out in the kitchen”! When I play golf, if possible, I will walk the 18-hole course instead of using a cart so as to get some exercise. Alright, so you get it—gardening, snow shoveling, mowing the lawn, sawing tree branches, walking the dog, carrying a heavy laundry basket, taking out the recycling, carrying your child on your back, dancing, anything at all that involves movement can actually be good exercise without the need for an expensive gym membership.

Jeffrey graduated from the Tisch Film School at New York University this evening. The lovely event took place at the Theatre at Madison Square Garden. Approaching the theatre, there was an option of an escalator or a stairwell to climb up towards the lobby of the theatre. Throngs of people were crowded like sardines in a can taking the escalator. There was nary a soul climbing the stairs but me! It took all of about thirty seconds to mount the steps! Are we a slothful society or what? To me, any chance for exercise is a good opportunity. Like bending over and picking up a stray dollar, a little bit of exercise is the equivalent of a gift that will enable you to make a small deposit into your exercise account (more about this later).

Nick Swisher showed up at the Oakland Athletics 2007 baseball spring training camp 20 pounds heavier than the previous season—this weight gain represented upper body muscle and not fat. This weight gain was not on the basis of anabolic steroids, nor on the basis of a personal trainer or new age training methods, but by virtue of an old-fashioned technique called “manual labor.” At a farm in central Ohio known as the Edge Athletic and Fitness Center, a facility that prepares marines for boot camp, he had chopped trees, and used a sledge hammer to smash concrete and raze walls! The mantra of this facility is *functional* strength, a philosophy of exercise in which

several muscles are built at a time doing real-life exercising, versus the typical one muscle at a time focus of weight lifting, which had become monotonous to Swisher. In fact, years ago, before baseball became a highly remunerated sport, many players spent their off seasons working on the family farms, participating in a form of integrational exercise that helped maintain their physical as well as financial well-being. It seems that *boot camps* (bridal, unisex, coed) have seen an increasing boon in their popularity as an organized means of rapidly whipping the highly motivated and committed into shape in a no-nonsense fashion.

I discovered an incredible means of integrational exercise—teaching my child to ride a bicycle! Isabelle, always the cautious one, was making rather slow progress in the transition between training wheels and a two-wheeler. What an ordeal teaching her to swim had been, and it appeared that the task at hand was even more onerous! In any case, we went out to our cul-de-sac street and, with seat lowered and tires deflated, circled for seeming hours with yours truly running along and holding onto the frame. Between the jogging, the balance, and the muscular effort required to keep up with and support Isabelle, I had the equivalent of a terrific workout; I ended up needing to take a second shower as I became drenched in sweat. The next day, Isabelle had her epiphanous moment and no longer needed me as a brace. We went off the cul-de-sac and onto the suburban streets, me jogging and Isabelle riding confidently; again, though, no need for me to work out on this day.

Use a conventional screw driver or a manual can opener instead of electric ones—use your muscle energy and save the fossil fuels for more important endeavors! Let's not forget *sex-ercise*—sexual activity is a terrific means of balanced exercise with aerobic, strength, and flexibility components, is physically and emotionally beneficial, and ...I do not need to go on lauding the benefits of sex! We've been programmed for it and I'm all for it!

A word or two on sexual function is indicated here. There is absolutely no question that achieving fitness will benefit your sexual function, whether you are a male or female. In addition to better aerobic stamina and improved body image, your healthier cardiovascular system will maximize your ability for optimal sexual performance. The penis and its female counterpart, the clitoris, are essentially extensions of our vascular system, and maintaining a healthy vascular system is imperative to intact blood flow and adequate sexual function. In fact, sexual dysfunction can be an early manifestation of cardiovascular disease and is a sign that you should be checked by a physician. In other words, if the small blood vessels that provide blood flow to the genitals are clogged with fat and plaque, your coronary (heart) arteries, carotid (brain) arteries, and renal (kidney) arteries just might be equally diseased.

How about personal trainers? A certified fitness instructor can be a real bonus and asset to your fitness program, particularly if you are just starting out or have seemingly reached a plateau in your personal regimen. If you have no familiarity with the equipment at the gym or have trouble with motivation, the expense of a trainer may be well worth it. It is important to learn how to exercise properly, just as it is important to learn the proper techniques and form in tennis and golf before you can achieve some degree of competency. Once you have a solid foundation, you can then continue on your own. While I have never availed myself of the help of a personal trainer (aside from Tony Horton on my P90X DVDs), I have sought advice from time to time of the personnel who staff the fitness centers that I have been a member of. It is certainly harder to push yourself as much as a personal trainer can motivate you to have a successful exercise regimen. If you tend to be a gym dodger but truly wish to be a gym rat, you may find the gentle prodding and enforcing of an exercise truant office (i.e., the personal trainer) just what the doctor ordered to keep you honest.

Can you overdo it with exercise? The answer is a resounding “yes.” Everything in moderation, including exercise! You do want to take your trusted car out for some good, long, purgative highway rides, but you don’t want to run it into the ground! Listen well to your body. It will tell you what it needs, when it needs it, and for how long.

When I was a Urology resident in Philadelphia, often the only way I could find time for exercise was before rounding at the hospital. So, I arose daily at 4:30, donned my Gore-Tex running outfit (it can be pretty chilly at times in Philly), and put in a handful of miles in the dark, cold northeast winter, completing my run before sunrise. Like the proverbial postal worker, I didn’t let snow or rain dissuade me from my routine. One particularly cold and wet morning, nearing the end of my run, I tripped crossing a city street, landing in a deep puddle filled with dirty, icy water. I lay there in the dark, freezing puddle, having taken in a mouthful of filthy urban spew, abruptly knocked from my Zen-like state back to reality, wondering why I was sprawled out in this muddy, Artic pool when I could be sleeping in a cozy, warm bed like any other normal person? Was this compulsive need for daily exercise pathological or physiological? Well, from that point on, I decided not to run on the dark, slippery streets of Philadelphia in ungodly pre-dawn hours, and opted to join a gym instead!

Bulimia is an eating disorder characterized by binge eating followed by purging measures, including use of laxatives and self-induced vomiting. There is an entity referred to as *exercise bulimia*, in which sufferers use exercise as the purging method following a bout of binge food consumption. I believe that I may have a *forme fruste* (a partial, incomplete form) of this—I am certainly not a binge eater, but after a large dinner, I often feel the need to compensate and neutralize the meal via intense exercise the next day. However, true exercise bulimia is a very

serious type of eating disorder, in which the exercise dependency becomes so extreme that serious consequences result; for example, people who continue running mile after mile daily despite stress fractures or people who go to the gym several times in one day. Exercise is meant to optimize one's health, not put it at risk in any way!

Nothing drives my forme fruste of exercise bulimia more than going on a cruise. When Willie Sutton was asked, "Why do you rob banks?" he replied, "Because that's where the money is." And like Sutton drawn to the banks for their concentration of money, many people are drawn to cruise vacations because of the food. What a sight to witness mostly obese people consuming five to six meals daily; it is such dramatic gluttony the likes of which I have never experienced. As I sat in a buffet-style restaurant aboard ship one morning, I observed an extremely overweight woman with not one but two enormous plates filled to absolute capacity, with every breakfast choice imaginable. I had a great urge to photograph this curious, actually nauseating, behavior—more so than of the sights on the off-ship excursions. It seemed to me that about 80% of the passengers were obese. Just observing this ubiquitous corpulence and the massive, continuous consumption was powerful incentive for me to hit the fitness center in the ship daily. There was never a problem gaining access to an exercise machine because the fitness center was apparently not the place to hang out for the vast majority of the passengers. I was on another cruise where I experienced the piece de resistance. I took a stroll around the ship with my youngest daughter and we meandered over to the play area in the kids section of the ship. We witnessed a very obese woman get on a see-saw with her child or perhaps grandchild. The large metal coil spring that acted as a strut to support the see-saw fractured under the prodigious weight of this woman and did so with an extremely loud noise—Isabelle and I stared at each other in disbelief! I've concluded that cruises are not my cup of tea!

In summary, fitness attained through exercise is essential in helping to achieve a healthy lifestyle—at any age. Exercise is the cornerstone and foundation of health, promoting physical, psychological, and social benefits for which there is simply no substitute. Exercise will help control your blood pressure, glucose, cholesterol and triglyceride levels, and will lower your risks for angina, heart attacks, claudication (pain in the legs and buttocks associated with insufficient blood flow), strokes, and sexual dysfunction. Exercise will help your cardiovascular system, your lungs, your muscle tone and strength, your posture, and help mineralize your bones. Exercise promotes weight loss, will make you feel and look better, improve your outlook on life and well-being, and help you achieve peace of mind. It will help prevent injuries, help you deal with stress, help combat depression, help keep you alert during the day, and help you sleep more soundly at night. Exercise will help prolong your life and maintain the highest quality of existence. Exercise is the miraculous, magical, life-saving tonic that can do all of the above and so much more!

It is important to know that even if you have a strong family history of cardiovascular disease with genetics not being on your side, you can help counteract the negative effect of your genes with a good exercise regimen. Remember, *genes load the gun, but lifestyle pulls the trigger!* So ditch the sedentary existence and get started, with reasonable and attainable goals in mind! Become a part of the fitness juggernaut—honor your body, invest in yourself, and make fitness and robust health a personal responsibility. Take BABY STEPS at first...it will most certainly lead to bigger and better achievements. Challenge yourself! As the Fila advertisement states, “*Respira, muoviti, scopri te stesso*” (“*Breathe, move, discover yourself*”). To paraphrase Joe Sharkey (*The New York Times* columnist): “there are three kinds of people: those that make things happen, those that watch things happen,

and those who wonder what happened.” My suggestion is to make things happen! Life is all about prioritizing, and exercise should be a vitally important priority for anyone interested in finding their fountain of youth. Whether it is indoors or outdoors, alone or in a group, using music or introspective focus matters not—what matters is that you participate and feel the benefits of being energized and revitalized. Remember, couches are nothing but practice coffins!

*“For of all sad words of tongue or pen, the saddest are
these—It might have been.”*

John Whittier

The Non-Traditional Approach to Exercise

You do not need to be a highly motivated exercise *fanatic* as some may consider me to be—you do not need to engage in *vigorous* exercise to achieve a state of fitness, good health, and longevity. What I am saying is that “conventional,” hard-core, intense, muscle-straining, lung-challenging, sweat-inducing exercise and weight training need not be the supreme component of *your* fitness plan. What works for *me* does not need to be what works for *you*. My exercise style may be best for those who have certain personalities—particularly those who are by nature very self-motivated, disciplined, organized, goal-oriented, and competitive. I have always been more physical than metaphysical, more swayed by the tangible than the intangible, more of a realist than a dreamer, perhaps, in fact, to my deficit. If your personality is more of the relaxed bohemian type, then another approach might be best for you.

There *is* another exercise paradigm that can be equally as effective. The “holistic” approach, as espoused by David Dorian-Ross, is an alternative to conventional exercise. Dorian-Ross feels that people avoid exercise not because

they are lazy or ignorant of the importance and benefits of good health practices, but because traditional intensive exercise regimens demand a degree of time commitment, discipline, and immersion that may *exclude* the average person. They thus become discouraged and ultimately dissuaded from participation in physical activity and proper nutritional habits and stress management as well. His thesis is that the specific style of exercise that is best suited for an individual is predicated on his or her personality. As such, exercise needs to be *customized* to the individual personality. He feels that many people avoid exercise because they are not motivated by achieving goals, they do not enjoy the actual exercise process, and because their self-image is at a variance with the image of the models promoted by the fitness industry. A final rationale for avoidance of exercise is because they fail to see the connection to the “*beautiful synergy of their mind, body, and spirit.*”

“Conventional” exercise is typically goal-oriented, often competitive, with an emphasis placed on performance—with the ultimate objective of achieving fitness, wellness, maintaining or losing weight, and a healthy physical appearance. The “holistic” approach is more focused on the inner experience and energy, the self-actualizing process and journey—with more emphasis on engagement, connection, and tuning “in.” It has a meditative and philosophical level to it with a goal of ultimately achieving a calm and relaxed state. This is as opposed to conventional exercise, which often is lacking a means of engagement and thus requires distraction techniques and tuning “out” and has a stimulating effect. Yoga is a good example of a holistic exercise. It has certainly become more mainstream, popular, and fashionable than years ago, when yoga was thought of as an exotic and mystical activity adopted by “om”-chanting meditators. Other examples of holistic exercise are tai chi and qigong.

Now let's get to my Uncle Mike. He is 71 and enjoys excellent health and does not participate in conventional exercise programs. Weight training is not a part of his regimen. He is largely a vegetarian and maintains a very healthy diet. He walks, teaches tai chi and yoga, and runs breathing, meditation, and holistic health workshops. He has a good family life and has "purpose," and many of the attributes that I have found to be characteristic of those who are aging well. Without weights and "my kind" of exercise, he is in great shape and has excellent prospects for longevity. So, traditional exercise is not for *everyone*.

Which approach is better? I do not believe that either approach is superior, as each style has certain advantages and disadvantages. I endorse whatever style works for the individual—*whatever it takes* to motivate you to stay active and fit is a good thing, as I see it. The truth of the matter is that a *complete* exercise regimen should be balanced and probably combine elements of both the traditional and holistic approaches. The ultimate goal of any exercise regimen should be to improve fitness, health, well-being, and longevity, and to do so in a way that nourishes the mind and spirit in addition to the body. As I see it, exercise should improve cardiovascular fitness and endurance, strength, flexibility, balance, and posture—as well as relieve stress and allow attainment of a calm, serene, and relaxed state.

Chapter Three

NUTRITION 101

The following is a brief overview of the basics of nutrition and is not intended as a comprehensive nutritional resource. It should, however, provide the preliminary and basic information necessary for you to understand how our dietary intake is such an important component of a healthy lifestyle.

A stable body weight is maintained by a balance between the intake of calories (energy) and the expenditure of calories. A calorie is actually a unit of *heat* and is defined as the *amount of heat necessary to raise the temperature of one gram of water one degree (centigrade)*. Physics dictates that if you consume the same amount of calories that you expend, your weight will remain the same. If you consume more than you burn, you will gain weight. If you consume less than you burn, you will lose weight. It's that simple! Most nutritionists recommend the consumption of between 2,000 and 3,000 calories per day, depending on your size and gender. If you are more active or have a higher metabolism, you will require more calories; if you are less active or tend towards a slower metabolism, you will require less calories. The caloric distribution should be approximately: 50-60% carbohydrates, 10-20% protein, and 30% fat (25% saturated, 50% monounsaturated, 25% polyunsaturated).

All nutritional energy originates as *solar energy*, energy derived from the sun as the source. Plants, including the oceanic biomass, are capable of a process known as *photosynthesis*, in which energy derived from sunlight melds *carbon dioxide* and *water* from the environment into *glucose*, the most basic food for cells of plants and animals.

Oxygen is released into the environment as a by-product of this process. When sunlight is not available (i.e., night time), the reverse process occurs—*respiration*—a process whereby glucose combines with oxygen to break down into carbon dioxide and water, releasing energy as a result. Within the framework of the food chain, animals consume the plants, humans consume the animals, and so the nutritional energy of the sun is ultimately used to provide our energy source. Plants not only provide the fodder to stoke the food chain, but are collectively capable of taking up loads of carbon dioxide and churning out oxygen as a result.

Global warming is a very real and important issue with catastrophic consequences contributed to by defects in the ozone layer and the greenhouse effect. In our battle against global warming, plants become a fundamentally important asset, and destruction of forests will further contribute to the problem. The bottom line is that plants are not only fundamental for the transfer of solar energy to humans, but also act to stabilize the planet by their uptake of carbon dioxide and release of oxygen.

Food is simply fuel used to keep our metabolic engines working—this fuel is composed of a wide variety of nutrients that have very specific metabolic effects on the human body. Nutrients can be sub-divided into five classes: *carbohydrates*, *proteins*, *fats*, *vitamins*, and *minerals*. Carbohydrates, fat, and protein are referred to as *macro-nutrients*, whereas vitamins and minerals are called *micro-nutrients*. Macro-nutrients constitute the bulk of our diets, acting as the “fuel supply” necessary for growth, energy, and basic nutritional health. Carbohydrates and protein pack 4 calories/gram whereas fat packs 9 calories/gram. Micro-nutrients, on the other hand, are only required by the body in very small amounts in order for us to function properly.

Carbohydrates consist of the elements *carbon*, *hydrogen* and *oxygen*, hence the term *carbohydrate*. Carbohydrates are our *primary* energy source, of which there are three main types: *simple* carbohydrates, *complex* carbohydrates, and *dietary fiber*.

Simple carbohydrates (sugars) have short-chained components and are found in such things as table sugar (sucrose), fruit sugar (fructose), and milk sugar (lactose). Glucose and fructose consist of a single chain (monosaccharides), and sucrose (glucose and fructose), lactose (glucose and galactose), and maltose (two units of glucose) consist of two chains (disaccharides). *Monosaccharides* can combine with each other to form more complex carbohydrates called *polysaccharides*.

Complex carbohydrates refer to these long chains of components that form the carbohydrate. Complex carbohydrates are found in cereals and grains (bread, rice, pasta, oats, barley, wheat, rye, etc.), and some root vegetables, including potatoes and parsnips. These complex carbohydrates, like whole-grain bread and brown rice, are more nutritious than refined carbohydrates because the essential dietary fiber and B vitamins have not been removed. They are digested slower than simple carbohydrates and therefore provide more long term-energy.

Dietary fiber (roughage) refers to the indigestible part of a carbohydrate food; *insoluble fiber* includes cellulose and lignin, whereas *soluble fiber* consists of gums and pectin. Insoluble fiber increases stool bulk and decreases transit time and can help prevent digestive problems and protect against such diseases as colon cancer and diverticulosis. Soluble fiber prevents the re-absorption of bile acids and cholesterol by binding them in the intestinal tract. Thus, soluble fiber, as exemplified by oatmeal, has some utility in helping to lower serum cholesterol levels. The presence

of dietary fiber also has the beneficial effect of slowing down the conversion of complex carbohydrates to simple sugars. Dietary fiber is not only contained in such unrefined foods as whole-grain cereals and breads, but also to a great extent in many fruits and vegetables, nuts, and seeds.

Dietary carbohydrates are broken down to *glucose*, which can be taken up by any cell in the body. Glucose is a simple sugar that serves as an important energy source. When it is not expended immediately for energy, it is stored in our bodies as *glycogen* by the process of *glycogenesis*. The hormone *insulin* is responsible for converting glucose into glycogen. Glycogen consists of a protein that acts as a primer at the core with glucose chains attached, organized like branches of a tree. Glycogen is present in our liver and muscles; when a state of saturation has been achieved and no more glycogen can be stored in our liver and muscles, the excess glucose is converted to fat. Glucose can be converted to fat, but fat cannot be converted to glucose. Glycogen is easily converted back to glucose to provide energy but the stored glycogen will provide no more than a few hours of fuel. Thus, there is a finite limit to the amount of carbohydrate stored in the muscles and liver—it amounts to approximately 1600-1800 calories. For endurance athletes, this is only enough fuel for a few hours of exertion, hence the importance of ingesting carbohydrates during long-distance events.

Once the fuel in the liver and muscles is exhausted, our large fuel storage system—our fat, needs to be tapped to provide energy. In contrast to our carbohydrate storage, fat is well stored by our bodies. Depending on how much fat we have stored, many days to weeks of energy can be provided. Even a person who is in excellent physical shape has a significant amount of fuel stored in the form of fat. For example, take a 200 pound athlete with a svelte 10% body fat, much lower than the average male body fat

percentage of 15-17% or average female body fat percentage of 18-22%. That still means 20 pounds of fat. Since one pound is the equivalent of 453 grams, 20 pounds is 9060 grams. At 9 calories per gram, this translates to over 80,000 calories stored in this lean, athletic individual. That's a lot of fuel in his tank!

Alternatively, proteins can be metabolized as an energy source. Because of the nitrogen content of protein, when used as fuel it does not burn as cleanly as carbohydrates or fats, creating *ammonia* as a waste product. Many amino acids can be utilized for *gluconeogenesis*, the process that occurs within the liver in which amino acids are converted to glucose. Under starvation conditions, the brain's demand for glucose requires the metabolism of our muscles in order to provide the amino acids for conversion into glucose.

Proteins consist of chains of *amino acids* that are the basic building blocks of all proteins. There are 22 amino acids in total. The human body can manufacture many of its own amino acids, but there are eight essential amino acids that cannot be synthesized (self-created); the intake of dietary protein is therefore necessary in order to acquire these. Proteins are necessary for growth, for tissue repair, and comprise hormones, enzymes, and antibodies. Adequate protein intake is mandatory for the dynamic rebuilding, remodeling, and renewing processes that are constantly ongoing within our bodies.

There are two types of proteins: *structural* and *functional*. *Structural* proteins form most of the solid matter in our bodies. An example of a structural protein is *collagen*, which is one of our most abundant proteins and helps form cartilage, ligaments, tendons, bone, and teeth. *Functional* proteins aid in carrying out many vital activities in the human body. Examples of functional proteins are: *hemoglobin*, present in the red blood cells, where it aids in

transporting oxygen; and *insulin*, which helps regulate the storage of glucose. A sub-class of the functional proteins are *enzymes*, which act as “catalysts” (facilitators or triggers) of specific chemical reactions and metabolic processes in the body. For example, the enzyme amylase is a digestive enzyme present in saliva and pancreatic juices that helps in the breakdown of carbohydrates. Foods that are high in protein content include: meats, fish, eggs, dairy products, nuts, legumes, and grains.

Lipids are a term that refers to fats, fatty acids, and oils. *Fats* consist of chains of component *fatty acids*. *Oils* are simply fats that are in a liquid state. Very little fat in our bodies actually exists as free fatty acids, as most fatty acids are linked together, three at a time, to a carrier molecule known as *glycerol*. Glycerol is a 3-carbon molecule derived from the breakdown of glucose. The carbon atoms of glycerol act as a scaffold to which fatty acid chains are linked, and the unit of glycerol with the three attached fatty acids is referred to as a *triglyceride*. Triglycerides comprise the fat stored in the fat cells of our bodies as well as the fat circulating in our bloodstreams. *Cholesterol* is a hard, waxy fat found in such foods as meat, whole milk, and egg yolks; additionally, our livers are capable of manufacturing cholesterol. Although excessive cholesterol is clearly unhealthy and linked to cardiovascular disease, cholesterol has many very important roles in our bodies. Cholesterol is the basic material used in the production of our sex and adrenal hormones, comprises bile acids, and is a component of our cell membranes.

Fats may be animal or plant based. Plants store oil in their seeds (nuts, corn, etc.), or in the vegetable themselves (olives, avocados). Fats function to cushion our internal organs (for example, the kidneys are enveloped in a generous fat pad), and as an insulation material for our bodies that helps conserve body heat, as well as providing

a means for the storage of energy and of fat-soluble vitamins (A, D, E, K). During periods of decreased caloric intake, fat reserves are mobilized and broken down to release energy. Fats are also important structural components of the brain and cell membranes, and are used in the manufacture of several important hormones. Remember, fat packs more than twice as many calories per unit weight than carbohydrates or protein. Anybody who has barbecued any kind of meat with a high fat content and has witnessed their would-be dinner engulfed in flames, realizes what a concentrated form of fuel that fats are. Given this significant difference, and because fats, carbohydrates, and proteins are interchangeable as sources of energy, it is obvious, then, to see why a low-fat diet is an important aspect of any weight-loss regimen. But remember, a moderate amount of fats and oils is a necessary part of a healthy diet.

To derive energy from fats, the fatty acids are broken down into 2-carbon fragments that cells can burn, a process known as *fatty acid oxidation*. Muscle cells are particularly adept at this once the supply of glycogen is depleted. Brain cells cannot get energy from fatty acids, but can from the breakdown products of fatty acids that the liver releases when it burns fats, referred to as *ketone bodies*. This becomes an important fuel for brain cells during the process of starvation.

Fatty acids are classified in terms of their *saturation*. *Saturation* is the term used to refer to the degree of occupation of carbon bonds by hydrogen atoms. The more a fatty acid is saturated with hydrogen, the less healthy it becomes and, conversely, the less saturated fats are the healthiest types and may be beneficial in preventing cardiovascular disease. *Saturated fatty acids* have all available carbon bonds occupied by hydrogen; this is the predominant component in animal fat, butter, and certain oils (coconut, palm, and palm kernel oils). Saturated fats

are solid or semi-solid at room temperature and are often referred to as *partially hydrogenated oils*. Saturated fat intake is clearly associated with elevated LDL cholesterol levels. *Monounsaturated fatty acids* have one bond occupied by hydrogen and are a component in peanuts, cashews, pistachios, walnuts, macadamia, canola, seeds, olive oil, and avocado. *Oleic acid* is the most common monounsaturated fatty acid and the main fatty acid in olive oil. Because olives are soft as compared to seeds, their oil can be extracted using gentle pressing techniques as opposed to that required for extracting the oil from hard seeds. *Extra virgin* olive oil is that derived from the first pressing and is the highest quality olive oil. *Polyunsaturated fatty acids* have two or more bonds unoccupied by hydrogen, and are typified by safflower, sunflower, sesame, corn, flaxseed, grapeseed, and soybean oils as well as fish oils. These are liquid at room temperature.

Our bodies can manufacture all but two of the fatty acids, referred to as *essential fatty acids*. The essential fatty acids are linoleic acid (an omega-6 fatty acid), commonly found in vegetable oils and linolenic acid (an omega-3 fatty acid), ubiquitous in microscopic forms of plant life such as algae and dark, leafy greens. Fatty fish (salmon, sardines, mackerel, and herring), and fish oils are an excellent source of omega-3 fatty acids. The “modern” Western diet is deficient in omega-3 essential fatty acids. In fact, the western diet has an unhealthy ratio of omega-6 to omega-3 fatty acids.

Saturated fats, trans fats, and cholesterol are present in dairy products and meats, particularly fatty meats and in virtually all processed foods. *Trans fats* are unnatural forms of unsaturated fatty acids that form when heat, pressure, and chemical solvents are used in the process of extracting vegetable oil from seeds. Trans fats, found in products such as margarine, are unhealthy because

they lower levels of high-density lipoproteins (HDL or good cholesterol), and raise levels of low-density lipoproteins (LDL or bad cholesterol), and serum triglycerides. These conditions are associated with insulin resistance, which is linked to diabetes, hypertension, and cardiovascular disease. Trans fats also form when oils are hydrogenated. *Hydrogenation* is the commercial process by which a relatively healthy vegetable oil (a natural, unsaturated fat), is pumped up with hydrogen—unsaturated oils such as soybean oil are heated with catalysts in the presence of pressurized hydrogen gas to incorporate the hydrogen. The liquid vegetable oil becomes a solid saturated fat, also known as *vegetable shortening*. This product will lessen the potential for foods made with them to spoil and will keep baked goods such as cookies and cakes fresh longer, and are used ubiquitously in fast food restaurants for repeated deep frying. Fully saturated fats are too solid to use, so manufacturers use partially saturated (hydrogenated) oils.

It is fundamentally important to read labels carefully because the nutrition label provides the grams of saturated, polyunsaturated, and monounsaturated fats per serving, as well as detailing the amount of trans fats. Make sure that the quantity of polyunsaturated fat is at least 3 times greater than the monounsaturated fat.

Proper nutrition requires a balance between intake of carbohydrates, proteins, and fats. As stated earlier, an approximate ratio of 50-60% carbohydrates, 10-20% protein, and 30% fats seems to work for most people. Endurance athletes, including cyclists and marathon runners, need to modify this ratio considerably, to consume a diet consisting of approximately 70% carbohydrates, 15% protein, and 15% fat.

Vitamins are nutrients that are necessary in relatively small amounts for proper health. There are a total of

thirteen vitamins, which are divided into two groups: the four *fat-soluble* vitamins (A, D, E and K) and the nine *water-soluble* vitamins (eight different types of B vitamins and vitamin C). The B vitamins function as *coenzymes*, binding to enzymes to facilitate metabolic processes. Vitamin B3—Niacin—is used clinically to help lower cholesterol. Vitamin C is involved in metabolism as well as functioning as an anti-oxidant, protecting us against the ravages of oxidative stress (more on this is addressed in Chapter 9). Folic acid is an important B vitamin involved in the regulation of homocysteine, a toxic amino acid derived from the metabolism of animal protein, whose serum level can be a marker for cardiovascular disease. The deficiency of folic acid in pregnancy can result in spinal tube defects such as spina bifida. Vitamin B12 deficiency can cause anemia and neurological manifestations.

Lack of a particular vitamin will eventually cause disease symptoms specific to the deficit of that vitamin. The best insurance against vitamin deficiency is to consume a good variety of healthy foods—fresh fruits and vegetables, whole grains, nuts, and seeds, not forgetting some healthy animal-origin foods. If you read nutritional labels, you will see that many of the foods that we eat on a daily basis happen to be “fortified” or “enriched” with vitamins. Under the circumstances of an excellent, well-balanced diet, it is probably not necessary to take supplemental vitamins. However, if your diet is at all suspect, taking a daily multivitamin would be prudent.

Vitamin A (retinol) is present in vegetables, including carrots and tomatoes, green leafy vegetables and fruits, including apricots and peaches. Vitamin A is important for vision.

- The B vitamins include:
- B1 (thiamine)
- B2 (riboflavin)
- B3 (niacin)
- B5 (pantothenic acid)
- B6 (pyridoxine)
- B7 (biotin)
- B12 (cyanocobalamin)
- Folic acid

All the B vitamins except B12 occur in whole-grain cereals (especially wheat germ), nuts, seeds, and green vegetables. B12 is unique among this group as the only B vitamin of animal origin, including meat (especially liver) and milk products, but also shellfish. Vitamin C (ascorbic acid) is present in fresh fruit, green leafy vegetables, and tomatoes. Vitamin D (calciferol) is present in dairy products and regulates the absorption and utilization of calcium. Vitamin E (tocopherol) is present in vegetable oil, whole grain cereals, and eggs, and has a role as an anti-oxidant and is used to mitigate scar formation. Vitamin K (naphthoquinone) is present in fresh vegetables and cereals and has a role in coagulation of the blood.

Minerals are elements that originate in the soil and cannot be manufactured. Plants obtain minerals directly from the soil, and most of the minerals in our diets derive from plant sources, occasionally from animal sources (as a result of animals consuming mineral-rich plant products), and from the water we drink, into which the soil's minerals have leached. Examples of minerals are: calcium, chromium, copper, fluoride, iodine, iron, magnesium, manganese, molybdenum, phosphorous, potassium, selenium, sodium chloride, and zinc. Calcium, for example (found in dairy, green leafy vegetables, hard tap water, nuts and seeds), is important for healthy bones and teeth. Iron (present in beef, poultry, fish, green leafy vegetables, whole meal bread, eggs, dried fruits, and lentils), is needed for hemoglobin production.

In summary, the five classes of nutrients—carbohydrates, proteins, fats, vitamins, and minerals—are essential for maintaining our physical beings and the innumerable physiological functions necessary for our existence. Not only do they supply the basic building blocks for growth, cellular renewal, and cellular function, but they provide the energy necessary to keep us functioning properly. Careful attention to a varied, yet balanced diet, will not only mitigate disease, but will facilitate the promotion of good health and is one of the cornerstones to aging well.

Chapter Four

EXERCISE PHYSIOLOGY AND CELLULAR METABOLISM

*This subject matter is very complicated, even for those with a strong science background. A wonderful resource for information on exercise physiology is a web site entitled Masters Athlete Physiology and Performance, authored by Dr. Stephen Seiler—this was my best and most comprehensive source of material for this chapter. **This information is certainly not in any way mandatory knowledge for the person seeking to live a healthy lifestyle and maximize longevity.** However, a basic comprehension of the science of exercise and cellular metabolism is very helpful in order to really begin to comprehend what is going on inside our bodies and cells when we are physically active. It is particularly enlightening to be able to understand and integrate concepts underlying nutrition, metabolism, and exercise, as difficult as that may be.*

Exercise requires repetitive and coordinated motion that is dependent upon our bones being moved by the contractile action of our muscles, under control of our brain and nervous system. For example, our arms can flex because the biceps muscle contracts (the fibers shorten), and our arms can extend because the triceps muscle contracts. The nerve signal for contraction of a muscle originates in the motor cortex of the brain and progresses down the spinal cord to the motor nerve to the muscle via a chain of biochemical reactions, resulting in the conversion of chemical energy to mechanical energy. The key players in our ability to exercise are our *skeletal muscles*, which function to move our bones, the

cardiovascular system, functioning to pump oxygenated blood and fuel to the muscles, the *lungs*, responsible for ventilation that serves to provide oxygen and carbon dioxide exchange with the atmosphere, and *cellular metabolism*, the process that provides the energy source and oxygen and carbon dioxide exchange at the cellular level. There are several potential sources of energy—those that involve utilization of oxygen (combustion) are referred to as *oxidative* or *aerobic metabolism* and the process that does not use oxygen is referred to as *non-oxidative* or *anaerobic metabolism*.

Skeletal Muscle

Skeletal muscle is composed of units known as fibers. The contractile proteins of muscle fibers are *actin* and *myosin*. There are two types of fibers: *fast twitch* and *slow twitch*. Fast twitch fibers are capable of contracting and relaxing very rapidly and are used for muscle action that is rapid, for example, sprinting or rapid movements of the eyes. Slow twitch fibers, on the other hand, are for slower contracting but endurance muscles, as would be used by a marathon runner or long-distance cyclist. Fast twitch fibers are the “white meat” (chicken breast) as opposed to the slow twitch fibers that are “dark meat” (chicken thigh and leg). *Mitochondria* are the powerhouses of our cells, located with the nuclei of the cell, where aerobic metabolism occurs. Fast twitch muscles have a low mitochondrial concentration with high anaerobic metabolism to allow bursts of high power energy production without oxygen, with a high capacity for lactic acid production. On the other hand, slow twitch muscles have a high mitochondrial and capillary concentration required for fatigue resistance and repeated contractions without lactate accumulation. The majority of our muscles are comprised of a mixture of both types of fibers. With intense endurance training, all muscle fibers have the capacity to develop augmented mitochondrial and capillary concentration.

Energy for muscle contraction and, for that matter, all metabolic processes, is provided by ATP (adenosine triphosphate). ATP can be thought of as the *metabolic currency* of our cells. Carbohydrates and fats are the dietary nutrients that, when metabolized, will provide the ATP for muscle energy needs (as well as the energy needs of all cells). Dietary carbohydrates are broken down to glucose, which can be taken up by any cell in the body. Muscle cells either use the glucose immediately or, alternatively, store the glucose in the form of glycogen.

The combustion of glucose or fat in order to provide the energy for exercise requires oxygen. The oxygen consumption of skeletal muscle is in direct proportion to exercise intensity—the more intense the exercise, the more oxygen is needed to metabolize the glucose in order to provide energy for the muscle. Since our available stores of glucose and glycogen are limited, long-distance endurance events—with the intensity of exercise below the lactate threshold (that intensity of exercise sufficient to permit lactate accumulation in the blood)—are primarily fueled by *fats*. Muscle cells require *oxygen delivery* and *mitochondria* in order to combust glucose or fat to create energy. Endurance athletes have a well-developed cardiovascular system and oxidative capacity in the skeletal muscles. Endurance exercise increases the demands on nutrient supply and waste product removal, stimulating capillary growth, resulting in trained athletes having up to 40% greater muscle capillary density than untrained persons. This oxidative capacity, coupled with efficient fat utilization and decreased glycogen utilization during prolonged exercise, results in more work being done before non-oxidative metabolism occurs, thus minimizing lactic acid accumulation. Unlike glucose metabolism, fat metabolism will never produce lactic acid as a by-product.

When the intensity of exercise picks up and oxygen demand overwhelms delivery, non-oxidative metabolism

kicks in. This encompasses the breakdown of sugars (*glycolysis*), or the breakdown of glycogen (*glycogenolysis*). Glucose, circulating in our blood, or glycogen, stored in our liver and muscles, is converted to lactic acid under such anaerobic conditions. This takes place *outside* the mitochondria, in the *cytosol* of the cell. Glucose, a 6-carbon sugar, is split into a 3-carbon derivative known as pyruvate. Through a complex series of chemical reactions, pyruvate is converted to lactate, resulting in energy production that fuels muscle contraction.

Muscle mass is a dynamic phenomenon contingent upon the balance between synthesis and breakdown, similar in this respect to bone mass. As we age, muscle fiber atrophy occurs as muscle breakdown exceeds muscle synthesis. However, strength training is capable of mitigating this process of muscular atrophy by increasing muscle bulk from hypertrophy of fibers. The decline in strength and power that accompany aging muscles is more evident than changes in endurance capacity.

The Heart

The heart is a fist-sized, incredibly-engineered pump located in the chest and protected by the sternum and ribs. It is enclosed within a membranous sac known as the *pericardium*. The heart is constructed of a special type of muscle referred to as *myocardium*. A muscular wall divides the heart into two cavities—the *left heart* (a high pressure pump) pumps blood throughout the body, while the *right heart* (a low pressure pump) pumps blood through the lungs. Each side is divided into two chambers, the upper ones called *atria*, the lower ones *ventricles*. Venous blood, depleted of oxygen and rich in carbon dioxide, returns to the right atrium and then enters the right ventricle, which pumps blood through the pulmonary artery to the lungs. Oxygen-rich blood returns from the lungs via the pulmonary veins to the left atrium and enters

the left ventricle, which pumps blood into the *aorta*, the major artery of the body. The heart's own blood supply to provide the myocardium with oxygen is via the *coronary arteries*.

Blood flows through the heart in a one-way fashion. The heart has four valves that prevent a backflow (regurgitation) of blood. The *tricuspid* valve is positioned between the right atrium and right ventricle; the *pulmonary* valve between the right ventricle and pulmonary artery; the *mitral* valve between the left atrium and left ventricle; the *aortic* valve between the left ventricle and aorta. Every heartbeat is divided into two phases: *systole*, marked by ventricular contraction, and *diastole*, marked by ventricular relaxation. Blood pressure is actually a measurement of the pressure at the time of systole and diastole. The nervous system to the heart (*sino-atrial* and *atrial-ventricular nodes*), is what is responsible for the electrical impulse that paces the heart.

The myocardial cells are compact and densely packed with mitochondria (five times more than skeletal muscle), with a prodigious capillary network—all features designed to provide oxygen to the heart muscle cells with a very short distance for the oxygen to diffuse from the capillary to the mitochondria. The heart can metabolize fat, glucose, and lactate. The cytoplasm of the heart muscle cells is rich in enzymes responsible for breaking down fats to by-products that can enter the mitochondria to produce ATP. Heart cells have a tremendous capacity for oxygen consumption and little tolerance for oxygen deprivation. These myocardial cells are remarkably fatigue-resistant and produce minimal lactate.

Exercise increases our heart rate and contractility—the initial increase with exercise is due to *vagal withdrawal* (a situation whereby stimulation of the vagus nerve, which functions to lowers the heart rate, is diminished); above a

heart rate of 100-110 beats/minute, the increase is due to rising levels of adrenaline with continued vagal withdrawal. As a direct response of the exercise-induced demand for oxygen, an increase in cardiac contractility, an increase in ventilation, and a decrease in vascular resistance of the working muscles occur. At the time of exercise, blood pressure rises and the blood flow through working muscle increases due to increased cardiac output and decreased blood flow to organs non-essential for exercise, including the intestine and the kidneys.

At rest, the average human *heart rate* is 70 beats/minute and average *stroke volume* (the volume of blood pumped by each beat of the heart) is 70 ml for a *cardiac output* (amount of blood pumped in one minute, the product of the heart rate and stroke volume) of about 5 liters. After several months of endurance training, the heart rate may diminish to 55 beats/minute or so; endurance athletes ultimately develop a decreased resting heart rate because of *parasympathetic shift* (a change to nerves that slow the heart), and decrease in *intrinsic heart rate* (the heart rate obtained when the nerve supply to the heart is blocked). However, the stroke volume increases to 90 ml to maintain the cardiac output. Maximal cardiac output increases in response to endurance training by virtue of the increased stroke volume. The increased stroke volume in the athlete is on the basis of increased left ventricular mass that occurs as a direct effect of the endurance training on the heart. Endurance training increases *preload*, the amount of blood in the heart immediately before a beat, by an increase in total blood volume. Endurance training decreases *afterload*, the amount of blood pressure the heart has to beat against (systolic blood pressure) to get blood flowing. With the combination of increased preload, decreased afterload, and increased contractility from left ventricular hypertrophy, the maximum stroke volume in the endurance athlete can increase significantly. Since the cardiac output is the product of the heart rate and

stroke volume, the cardiac output of the endurance athlete can increase significantly. This will facilitate the circulation of oxygen-rich blood to the muscles.

Hallmarks of endurance training are a *reduced resting heart rate* and *increased stroke volume*. The resting heart of the endurance athlete is more efficient, performing the same work with fewer beats as a result of improved contractility, which results from an increase in size of the heart muscle. Essentially, a motor with a given horsepower has been exchanged for one with a larger horsepower that achieves the same work at a lower RPM.

As we age, the pump performance of the heart diminishes. A decline occurs in the *maximal heart rate*, *heart contractility*, and the *arterial compliance* (elasticity) that can cause increased vascular resistance and higher blood pressure. Of interest, the maximum heart rate is the same in the endurance-trained athlete as in the sedentary person—the maximal heart rate is on the basis of the electrical conduction system of the heart as well as sensitivity to adrenaline, both of which change with the aging process. It is only the resting heart rate that changes as a result of endurance training.

The Lungs

Our lungs ventilate our body, much as a breeze through an open window ventilates a room. Air consists of 21% *oxygen* and 79% *nitrogen*. The lungs are the site where the exchange with the atmosphere occurs—where oxygen enters our system and *carbon dioxide* is released. Blood is the transport vehicle that carries oxygen from the lungs to every cell in the body and carries the waste product of metabolism—carbon dioxide—from the cells back to the lungs. Humans breathe about 12 times per minute (*ventilatory frequency*) at rest, with each breath volume (*tidal volume*) being about 750 ml—the *ventilatory volume*

(the product of ventilatory frequency and tidal volume) is 9 liters/minute. Ventilation increases in proportion to exercise intensity. The respiratory nerves control ventilation by increasing tidal volume (at low exercise workloads) and breathing frequency (at high workloads), in order to provide for the increased oxygen demands of exercise.

The act of ventilation is similar to the way a bathroom plunger works—the contractions of the diaphragm muscle pull the chest cavity down, allowing air to rush into the lungs similar to pulling up on the plunger. Under resting conditions, we “abdominal breathe” using the diaphragm that causes the abdomen to bulge with inspirations. The diaphragm is a stellar endurance muscle, not too dissimilar from the heart in terms of endurance capability. When oxygen demand increases, the force of contraction of the diaphragm increases as well as the recruiting of the accessory breathing muscles (the intercostals and other abdominal muscles), which further expand the chest cavity by their contractions.

At rest, the pulmonary artery conducts the stroke volume of the heart (70 ml of blood) into a capillary network within the lungs, with a total surface area of over 70 square meters. For those tennis players out there, this is the equivalent of sweeping a one quart puddle of water (after a rain, when you really feel the urge to play), over the entire surface area of eight tennis courts—a tremendous surface to volume ratio! Red blood cells literally have to squeeze through this proliferation of capillaries in single file—this ensures extremely rapid oxygen-carbon dioxide exchange across the capillary membrane. Simultaneously, the lungs move air down a system of arborizing air passages ending in about 300 million tiny spherical *alveoli* that form the terminal air exchange. These two exchange systems, *capillaries* for blood and *alveoli* for air, are so intimately coupled in order to ensure virtual instantaneous exchange of oxygen and carbon dioxide.

During exercise, our blood serves a number of purposes, including cellular delivery of glucose, oxygen, and hormones, and removal of heat, carbon dioxide, and acids. About 45% of our blood volume is red blood cells. Every red blood cell contains hundreds of hemoglobin molecules, each of which is capable of carrying four oxygen molecules. For an average person, the oxygen concentration in blood is about 200 ml O₂/liter blood.

Our ventilation capacity is not the limiting factor in exercise performance because, even during maximal exercise, our ventilation capacity is not maximized. In fact, the maximum oxygen transport through the lungs is not significantly improved by endurance training—it is the *cardiovascular capacity for oxygen transport* that is the key to achieving fitness. The ventilatory response to exercise is an increase in the respiratory rate up to 35-50 inspirations per minute as well as an increase in tidal volume (the volume of air moved with each cycle of inspiration-expiration). *Oxygen consumption*, referred to as $\dot{V}O_2$, is directly related to exercise intensity—the more intense the exercise, the greater the consumption of oxygen. Remember that aerobic combustion (cellular metabolism using oxygen) supplies the energy for long-term endurance events, primarily using fats as an energy source since carbohydrate storage (glucose in the bloodstream and glycogen in the muscle and liver) is limited.

The ventilatory threshold is the workload at which the ventilatory response to graded exercise first departs from the linear to exponential; this corresponds to labored breathing with difficulty talking and accumulation of lactic acid in the bloodstream. Once above the ventilatory threshold, exercise cannot continue for very long. Good athletes seem to develop breathing “rhythms” that are coordinated to the rhythms of their movements.

The *VO2 max* test is defined as: *the maximum volume of oxygen that can be consumed during exercise at maximum capacity*—essentially, a measurement of the circulatory capacity to deliver oxygen. It is oxygen *delivery* and not oxygen *utilization* that limits VO2 max. This is determined by measuring oxygen uptake at rest and at increasing workloads until a plateau in uptake is achieved. (Exercise can be performed at an intensity above the plateau, but requires non-oxidative metabolism with an increase in lactic acid production.) Thus, fitness can be measured by the volume of oxygen consumed while exercising at maximum capacity. VO2 max is measured in terms of liters of oxygen used per minute per kilogram of body weight. The better the cardiovascular shape you are in, the higher your VO2 max values and the more intense exercise that can be performed as compared to those not as well conditioned. The achievement of VO2 max is characterized by muscle fatigue, hyperventilation, and the reaching of maximum heart rate. In mathematical format, the *VO2 max* = (maximum heart rate) x (maximum stroke volume) x (maximum arterial-venous oxygen difference).

Arterial-venous oxygen difference is the difference in oxygen content of the artery and the vein, which is a measure of how much oxygen is extracted. The arterial-venous O2 difference at rest is 4-5 ml O2/100ml blood or 25% extraction; at VO2 maximum, it is 15-17 ml/100ml or 80-85% extraction.

The VO2 max for the untrained male in his mid 30s is 40-45 ml/min/kg; for a similar male who exercises aerobically on a regular basis it is 50-55 ml/min/kg; for the elite runner at age 50 it is greater than 60 ml/min/kg; for an Olympic champion it is greater than 80 ml/min/kg. Genetics play a large role in this, and the combination of the right VO2 max genes plus endurance training is a formula for an aerobic monster like Lance Armstrong, whose VO2 max has been measured at 85 ml/min/kg! Of

note, the inevitable decline in VO₂ max with aging will slow to only about 5% per decade with endurance exercise. Thus, exercise helps maintain our youth!

The stroke volume remains constant up to VO₂ max in moderately active people, but endurance-trained athletes can increase their stroke volume through the increase in workload. Aerobic training significantly improves the oxygen transport system and increases oxygen utilization by increasing the maximum cardiac output and the maximum arterial-venous oxygen difference—this occurs via improvements in cardiac function, central and peripheral circulation, and muscle metabolism. Oxygen extraction increases because of an increase in the diffusion gradient for oxygen between the capillaries and skeletal muscle cells and increased myoglobin content of trained muscle. This is facilitated by an increase in capillary density.

Although our lungs do tend to get less elastic as we get older, declining lung capacity does not appear to be a major factor in the performance limitations associated with aging—lung function is not the weak link in endurance performance, assuming that you are not a smoker.

Cellular Metabolism

Metabolism takes place within the cells of our bodies—in other words, metabolism occurs on a cellular basis. Oxidative metabolism uses either adenosine triphosphate (ATP) or creatine phosphate as an energy source for muscle contraction. ATP is a molecule composed of adenosine bound to three phosphates. It takes extra energy to bind the second to the third phosphate and this provides the power source of the cell. When energy is needed, the ATP is broken down into ADP (adenosine diphosphate), and this releases the third phosphate and a burst of energy. The energy is derived from the release of the third

phosphate. ATP can be thought of as a fully charged rechargeable battery and ADP as the spent battery. When the battery is recharged, the phosphate is reattached to ADP to make ATP. This can only occur in the presence of oxygen and is referred to as *oxidative phosphorylation*.

The energy derived from the calories in carbohydrates, fats, and proteins from our diet cannot be burned all at once like kindling on a fire, since this would not be useful for a living organism that is in constant need of energy in very controlled, small amounts. A useful analogy is a hot water heater: in the United States this is not a very efficient means of heating water, with the tank being heated at all times and hot water being utilized on demand. This is *not* how our bodies work. We do not keep a ready store of energy available at any given time—we manufacture it on demand.

When I visited Jeffrey in London (who was taking a college semester abroad, working for BBC), I rented a flat with my brother for a few days. We were surprised to learn that the hot water heating system in London does not rely on a tank for storage—this technology is referred to as a ‘tankless hot water heater’—essentially the heating of water strictly on a demand basis. This is analogous to how the metabolic system works in our bodies to provide energy on an on-demand basis.

Dietary calories provide the energy responsible for reattaching the terminal phosphate to ADP. The chemical-bond energy in ATP can then be used by our cells in amounts appropriate to their specific needs. This cellular combustion of food substrates to make ATP takes place inside the mitochondria, the powerhouses of our cells. This is absolutely clean combustion, with the waste products being water and carbon dioxide. *Oxidative metabolism* can be maintained as long as oxygen is available to fuel the process. Within the mitochondria of

the muscle cells, this oxidation of fuels occurs via a complex series of chemical reactions referred to as the Krebs's cycle. (The Krebs's cycle is the universal bane of first-year medical students studying biochemistry since it demands rote memorization and is of little to no practical clinical value! Oh, how many times I have had to memorize it!) These chemical reactions are dependent upon oxygen use and they speed up as the intensity of the exercise increases. The ultimate result of oxidative metabolism is the production of ATP, the actual source of energy at the cellular level (once again, what has been referred to as *metabolic currency* of the cell).

When oxygen becomes scarce—that is, when oxygen demand exceeds supply because of the intensity of exercise, *non-oxidative metabolism* kicks in. Under such anaerobic conditions glucose, circulating in our blood, or glycogen, stored in our liver and muscles, is converted to lactic acid. This takes place in the cytosol (fluid within the cell), as opposed to oxidative metabolism, which takes place within the mitochondria (located within the nucleus of the cell). Glucose is split into *pyruvate*, that is ultimately converted to *lactate* via a complex series of chemical reactions which also results in ATP production.

Glucose (6 carbons) can be cleaved into pyruvate (3 carbons). Pyruvate can be pulled into the mitochondria or converted to lactic acid in the cytosol. Pyruvate in the mitochondria is oxidized to produce a high ATP yield. With increasing ATP demand, anaerobic glycolysis increases. At low workloads, pyruvate is primarily shuttled into the mitochondria for oxidative breakdown because slow twitch muscle fibers have lots of mitochondria. At high workloads, fast twitch (low mitochondria) muscle fibers start being recruited and more pyruvate is converted to lactic acid anaerobically. The heart, liver, kidneys, and inactive muscle consume lactic acid to be used for conversion back to pyruvate or to resynthesize glucose. So, lactic acid is actually another form of energy for our cells.

When the rate of lactic acid production exceeds its disappearance, lactic acid starts appearing in the blood; this is referred to as the *lactate threshold*. Exercise intensities above the lactate threshold cannot be sustained for long. Lactic acid production allows us to perform high intensity exercise; however, the lactic acid is broken down into lactate and hydrogen molecules. The lactate can be used as fuel, but the hydrogen makes the environment around the muscle cells acidic, and the acidity acts to inhibit muscle contraction. Ultimately, the hydrogen will combine with oxygen to create water. Endurance training causes muscle adaptation and increased mitochondrial mass that will decrease the lactic acid production at any given exercise intensity. The lactate threshold of the typical untrained male is about 60% of the VO₂ max; of the trained male about 70% of the VO₂ max; of the elite athlete in excess of 80% of the VO₂ max.

Carbohydrates, fats, and proteins all can be utilized as energy sources. Carbohydrates are the main fuel for aerobic/endurance activities and are the only fuel that the central nervous system can utilize, as the brain cannot produce energy from fat or protein sources. When depleted of carbohydrates, hypoglycemia can occur, manifesting with neurological symptoms including disorientation, confusion, and nausea. When below the lactate threshold, the energy from the consumption of carbohydrates and fats is roughly balanced, but when oxygen delivery is compromised by stepping up the exercise intensity, the anaerobic system kicks in, which uses primarily carbohydrates as its energy source. Protein sources, as well, are important for the endurance athlete. Adequate protein intake will prevent the breakdown of muscle for energy production, tissue repair, or immune system needs.

Chapter Five

EATING WELL AND EATING RIGHT

JVA: Age 79

It is a real genetic blessing if you arrive in this world in excellent health and are fortunate enough to be the child of either a mother or a father who has lived into their nineties. Better than that, suppose your grandparents also lived to well into their nineties. Relatively few of us have that ideal genetic background. Therefore, most of us, if we expect to live a long life and also to enjoy our life, have to make the effort to ensure that longevity by putting a great deal of emphasis toward how we care for and conduct ourselves during the various phases of our lives and through the illnesses we may encounter during our lives. As for me, I was born in June of 1927 and lived through the struggles of the Depression. My father left my mother when I was a toddler, so my sister and I were raised by my mother. I went to Catholic grammar and high schools, spent a little over two and a half years in the Merchant Marines and graduated from Seton Hall University at the age of 43 after having spent six years going to evening classes. I worked for the same company for 42 years and retired at the age of 62. My mother lived to be 77, my sister died at the age of 80, and my father passed away at the age of 59. At the age of 43, I was divorced from my first wife and at the age of 56 married my second wife. I have been fortunate to have met and married the right woman who takes exceptionally good care of me. We both enjoy doing simple things like gardening and taking mini-vacations and day trips to the shore area of New Jersey. I try to avoid stress and confrontations with family and friends. I avoid discussions regarding religion, politics, and diet. I respect other opinions and therefore stay away from any attempt

to convince someone else that my way is the best way. I don't drink any alcohol and avoid fats, cholesterol and sweets as much as possible. I don't eat ice cream, candy, pork, beef, or lamb. I only drink skim milk or soy milk. I enjoy fish and lean poultry and lots of fruit and vegetables. My wife is an excellent cook and I enjoy cooking as well, so we prepare and eat delicious meals at home rather than eating out, which we reserve for special occasions. In my particular situation, I have experienced double coronary bypass surgery 24 years ago, radiation for prostate cancer 6 years ago, and two coronary stents inserted 18 months ago. I was fortunate enough to have these procedures take place in highly recommended medical institutions and performed by very competent doctors. I have always tried to learn as much as I could about my medical conditions and medications, current and new treatments, and have paid careful attention to my doctors' advice. We as individuals are responsible not only for how we conduct our lives after illnesses such as I have experienced, but we must also keep ourselves informed regarding nutrition, physical exercise, and what is best for our longevity. In the beginning it may seem difficult, but the reward is well worth it. I loved everything I used to eat. This had to change in order for me to survive heart disease. I found out that, after a while, it was an easy way of life that offered no problems provided that I willingly took on the responsibility of helping myself live better for the people I love. Now the things that I know that are not good for me, I truthfully don't miss. I read about health issues that are of interest to me to keep my quality of life. This is my responsibility. I exercise five days a week and have a very full life. I also believe that spirituality has a real influence on our lives and that there is nothing more fulfilling than having a belief in a spiritual being to round out our lives. After all, our life was given to us; therefore, we should show our appreciation for it by thanking the one who thought enough of us to give it to us in the first place!

Michael Pollan, a journalism professor at the University of California/Berkeley and author of *The Omnivore's Dilemma*, wrote a fascinating article in the January 28, 2007 *The New York Times Magazine* on the subject of nutrition. In a most streamlined fashion, he summarized the answer to the question of what humans should eat in the following seven words: ***“Eat food. Not too much. Mostly plants.”*** If you are not interested in reading any further, you can stop here, bide his words carefully, and you will be doing better than most! By *food*, he means a nutritional substance that your great-great grandmother would recognize as food, not a *food-like* item such as breakfast cereal bars or non-dairy creamer. *Not too much* is pretty obvious. A *mostly plants*-based diet will result in the consumption of a moderate amount of calories and plenty of fiber and anti-oxidants.

I have a confession to make: I am as guilty as anyone for having eaten a lot of bad foods once upon a time—sugary cereals and big, oily muffins for breakfast, baloney sandwiches and hot dogs for lunch, donuts for dessert, fast food at the mall, etc. I have been abusive and disrespectful to my body, although I claim ignorance as an excuse. Similar to the tobacco situation, at one time we simply did not know any better—now we are educated and informed, so ignorance is no longer a valid excuse for smoking or for poor eating habits. In the 21st century, consumption of unwise food choices is a conscious choice of ignoring as opposed to ignorance. To continue with the tobacco metaphor, I consider the intake of unhealthy foods as equally toxic and malignant a proposition as that of smoking cigarettes. I cannot quantify it in exact terms but, for example, eating a piece of pizza oozing with greasy pepperoni is certainly no less harmful to your body than smoking a few cigarettes. I have sinned, I am aware of my active participation in bad eating, and I have reformed my wayward eating habits, now exercising nutritional conscientiousness...and so can you.

As I readily admit, I am not an expert in the field of nutrition. However, over the years I have learned a thing or two about healthy eating habits. Most of what I have to say is simply good old-fashioned common sense, gleaned from the reliable *school of hard knocks*, coupled with doing a great deal of research and reading on nutrition and metabolism. Simply by reading every food label carefully, you can obtain a significant insight into the component ingredients as well as their nutritional values (or lack thereof). Shortly after my daughter learned to read, I taught her to read a nutritional label. I honestly believe that it is extremely important to learn to read the labels and teach this to our children, to get them started in the right direction from an early age. Food should be thought of as a drug, and we are on a *need-to-know* basis about the component ingredients.

Eating right is incredibly important! Our bodies need premium fuel to run (and keep running) optimally! So, fuel yourself with the best and most wholesome choices available and be consistent in your fueling practices. Remember that when we fuel up, our intent should be to use that fuel for the long ride ahead—you do not want to fuel up the vehicle only to have it sit in the garage all night, so make an effort not to consume large meals late in the evening!

We are designed in such a clever way as to have our basic *need* for food consumption intricately linked with the *desire* to eat and the real enjoyment of the process; this, to our good fortune, ensures that we keep our engines running smoothly. Just imagine if we were not designed in this fashion, and there was neither hunger from not eating nor satisfaction derived from eating. Imagine if the only indicator for consumption was some sort of signal or “warning mechanism” in our bodies or brains somewhat similar to a low fuel gauge in a car! There would be no obesity; in fact, many humans would probably under-eat

if the only incentive for eating was survival and not pleasure or satiety. Malnutrition would probably run rampant, restaurants would be out of business, and our consumption would probably be a tasteless “formula,” containing all the necessary nutrients to sustain a human being. This formula would need to be administered when our weight dropped below a certain amount or at certain time intervals.

As food science and technology have “advanced,” *processed* and *refined foods*, particularly *enriched wheat flour* and *sugar* have increasingly replaced whole and natural foods in our diet. Traditional stone mills have been supplanted by highly efficient, modern-technology mills. Wheat grain consists of *bran*, the outer covering of the wheat seed; the *germ*, the embryo or sprouting section; and the *endosperm*, the source of the white flour that contains carbohydrates and protein. Modern milling enables these three components to be separated. White flour has the bran and germ removed, resulting in a pure, highly-refined powder as opposed to whole wheat flour that contains the bran. By removing the fiber-rich bran, an obstacle to the efficiency of the milling process is eliminated and the resulting product has a longer shelf life as well as the “advantage” of making a light and fluffy bread, as opposed to the traditional dark, coarse, heavy breads. The longer shelf life of this refined product is on the basis of the fact that it is less nutritious to pests and thus more economically enriching to the processing company! The refined product is also more rapidly converted to glucose by the body because of the enhanced surface area of the silky, refined powder that is exposed to digestive enzymes. The milled bran and germ components generally are used to produce animal feed. So, instead of consuming wholesome, slow-digesting grains, many of us eat pulverized and highly-refined starches that are essentially pre-digested and rapidly raise blood glucose, promoting insulin resistance, weight gain, and contributing to the

obesity, diabetes, and cardiovascular disease epidemics. “Enriched” wheat flour simply means fortifying the nutrient-depleted refined flour with vitamins and minerals to replace some of those that were lost with the refining process.

High fructose corn syrup, an inexpensive, commercially-produced sweetener, has emerged as the most commonly used sweetener in soft drinks and many other sweetened food products. Developed in 1971 by food scientists in Japan, it is a corn derivative that is six times sweeter than cane sugar; it also acts as a preservative that both protects frozen products from freezer burn as well as maintains the freshness of long shelf-life products. However, *fructose* as opposed to *sucrose* or *glucose*, takes a metabolic route known as *metabolic shunting*, arriving in the liver virtually intact versus sucrose or glucose, which are broken down prior to their arrival in the liver. Once in the liver, this intact fructose is converted into glucose or, since the body often has no additional metabolic need for glucose, the fructose is instead converted into triglycerides, which are fat precursors. The consumption of high levels of fructose ultimately pushes our metabolism towards fat *storage* as opposed to fat burning.

Hydrogenation is the commercial process by which a relatively healthy vegetable oil (a natural unsaturated fat) is pumped up with hydrogen—unsaturated oils such as soybean oil are heated with catalysts in the presence of pressurized hydrogen gas to incorporate the hydrogen. Fully saturated fats are too solid to use, so manufacturers use partially saturated (hydrogenated) oils, known as *partially hydrogenated vegetable oils*. The liquid vegetable oil becomes a solid saturated fat, also known as *vegetable shortening*. This product will mitigate the potential for the fat to turn rancid and will keep baked goods such as cookies and cakes fresh longer, and are used ubiquitously in fast food restaurants for repeated deep frying. Thus is

created *trans fats*, which have been linked with inflammation and cardiovascular disease. Of recent, the New York City Board of Health has set in motion plans to eliminate trans fats in New York City restaurants and many school systems nationwide have already eliminated foods containing trans fats from their cafeteria menus.

Palm oil was introduced by the British as a plantation crop and later the Malaysian government subsidized its widespread planting. It is advantageous in terms of it being inexpensive, produced year round, and stable in that it allows products to have a long shelf life. Even though it is technically a vegetable oil, it is more similar to beef tallow than vegetable oil and is more saturated than pig fat. It is such a highly saturated oil that it has been called *axle grease*, *tree lard*, and *cow fat disguised as a vegetable oil*. So, even though it is not an animal fat, palm oil and other tropical oils such as coconut oil and palm kernel oil are so saturated that they behave like animal fats. Beware the tropical oils! Better not to eat them but to smear them on your skin as a component of sun screens and skin moisturizing lotions! In fact, beware of consuming any chemicals that are also products in moisturizers and cosmetics!

Fast food typically contains highly refined *enriched wheat flour*, *high fructose corn syrup*, and *partially hydrogenated vegetable oils*, the vicious trio that makes fast food so unhealthy. It behooves all of us to read nutritional labels very carefully in order to minimize our exposure to such malignant food substances.

Eating can be considered highly intimate on a certain level, so you want to be sure that you have a healthy relationship with food. Allowing something into your body is a very personal, almost “sexual” activity. That being said, before putting any food substance into your mouth, be mindful of the question: “Is this item something that I want to

enter into my physical being?” “Do I want this to actually become me—to be integrated into my being?” After all, you are what you eat, literally! Now is the time to understand the consequences of *promiscuous* eating! After you consume something in the evening, you want to be able to live with yourself when you awaken in the morning! This might not be the case if that “something” was a half gallon of double-fudge ice cream or an entire bag of sour cream and onion potato chips! Eating is a rather sensual activity that stimulates and piques all of the senses: so take the time to see, smell, hear, touch, and taste your food! Try to make an effort to eat slowly, deliberately and mindfully and to savor the experience. Make every bite an enjoyable, pleasurable one, while consuming healthy—yet delicious—wholesome foods!

Eat when you are hungry! Eating for reasons other than genuine hunger—*dysfunctional* eating—is a terrible habit. Try not to let boredom, depression, lack of sleep, mood swings, etc., be a reason for consuming food that you really do not want...nor need! Do not allow the loss of inhibition resulting from the consumption of a few glasses of wine or any other alcoholic beverage to allow you to eat with reckless abandon—this also falls under the category of promiscuous eating. At times, thirst can be confused for hunger, so always stay well hydrated. A good general guide to proper hydration is when our urine is a very light amber color and not a rich golden color like liquid Dial soap, which is likely indicative of dehydration.

Allow yourself to snack! Snacking is absolutely fine as long as you make every effort to eat nutritious snacks! Calorie-dense, high-fat, low-fiber foods and beverages (a.k.a., junk foods) need not be completely eliminated from your diet, but should be consumed in moderation! Train yourself to read food labels before just popping anything into your mouth! Baked potato and corn chips have significantly less fat than standard chips. Munching on a

few pieces of dried fruit (key word: FEW!)—including raisins, apricots, cranberries, figs, prunes, etc.—or fresh baby carrots is a nice alternative to non-nutritious, sugary snacks when you get a craving for something sweet. When away from home, try to make a habit out of bringing along vegetables and/or fruit that can be easily packed in your briefcase, backpack, or purse. Carry along homemade trail mix using whole-grain cereal, pretzels, seeds, and nuts, combined with a variety of dried fruits. Freshly-cut, brightly-colored vegetables, including red, green and yellow pepper strips, broccoli and cauliflower florets, jicama, mushrooms, carrot sticks, etc., make for terrific snacks. You can use a low-fat, creamy salad dressing as a dip, if you so desire. Alternatively, an array of fresh fruits (apples, pears, oranges, bananas, berries, to name just a few), topped with low-fat yogurt, is a healthy, delicious, filling and nutritious between-meals treat!

I enjoy fruit smoothies made with fat-free milk or soy milk, fat-free yogurt, fruit, and a touch of sugar or sugar substitute, particularly after exercising. I keep a bag of mixed frozen fruit in the freezer just for this purpose, which is especially useful during the winter months when fresh fruit is less available in the northeastern United States. It is extremely filling and refreshing, quenches my thirst and cools me down after a long bike ride or good workout. It is low in calories, has no fat, plenty of protein and carbohydrates, is chock full of anti-oxidants, and is very filling. I use a variety of different fruits to shake it up. I try all sorts of permutations, most recently fresh blackberries, strawberries, blueberries, raspberries, and bananas, which turned out to be a delicious combination.

It is a smart idea to keep a bowl of fresh, colorful fruit on your kitchen counter. Not only is it pleasing to the eye, but most people tend to reach for and eat whatever is handy. If cookies, candy, and chips are in sight, you have a greater chance of eating them, hungry or not! So keep

the junk stashed away so that access is poor! Better yet, do not keep a whole lot of junk food at home at all! Fresh fruits and vegetables are a genuine bargain compared to that of junk food items, both in dollar terms as well as nutritional terms. Do not go food shopping at the supermarket when you are hungry! You never know what kind of junk will end up in your cart when you shop in such a state!

I am an early riser by nature, so I typically eat breakfast between 6:00-6:30 a.m. Not surprisingly, therefore, I start feeling hunger pangs by 9:00 a.m. and I find that a low-fat yogurt is particularly satisfying, has less than 100 calories, provides a nice balance of protein and carbohydrates without fat, and stems my hunger for a few hours. By 11:00 a.m., when I once again feel the desire to eat a “little something,” a banana does the trick in holding me until lunchtime.

How many meals you have daily is inconsequential; there is no harm done if you prefer smaller, frequent meals as opposed to the typical three larger meals a day—in fact, this kind of “grazing” is often promoted by many weight-loss experts. Most people who eat in this manner find themselves generally less hungry and more energized since their metabolisms are receiving continual small “boosts”! Whatever you choose, do not skip meals! Eating a nutritious breakfast is important to get you “jump” started after a night of relative “starvation”—what effectively amounts to a twelve or more hour fast; consumption of a healthy breakfast will provide you with the fuel to be both active and productive throughout the morning. Try not to go too long a period of time without consuming anything, as our bodies require frequent nourishment; plus, the *rebound* hunger that results from prolonged abstinence will most likely induce you to ultimately take in more calories when you do eat than had you not skipped a meal at all.

The consumption of large amounts of food late at night, particularly right before sleeping, is simply not a good idea! Late night gorging will provide you with a large energy load (calories) at a time (sleep) when you burn the least amount of calories—it's the equivalent of pumping your car full of fuel only to store it in the garage. Additionally, this kind of consumption may interfere with your sleeping. If possible, let the last thing you eat before going to bed be something very healthy, such as a piece of fruit. Finish off the day on a nutritious note!

Learn how to read a nutritional label! Make it a habit to always look at the back of a package or can. Labels now exist on nearly all supermarket purchases, are easier than ever to comprehend and will give you some basic facts regarding the nutritional value of food items before you decide to buy them, prepare them, or consume them. As Jack LaLanne advises, if you can't pronounce the ingredients, don't buy the product! Remember, fat-free is not synonymous with calorie-free and low carbohydrate does not mean low calorie! Careful reading of a label will allow you to select foods that are lowest in saturated fats, trans fats, and cholesterol. Pay heed to the percentage of fat calories and the breakdown of saturated vs. unsaturated fats. *Partially hydrogenated vegetable oils* are bad. *Trans fats* are bad. *High fructose, corn syrup* is bad. *Enriched, bleached flour* is bad. *Vegetable shortening* is bad. *Preservatives—nitrites, nitrates, sulfites, and potassium bromate* are bad. *Artificial colors and dyes* are bad.

Learn portion control! Make your mantra: “*everything in moderation!*”. When you order a pizza, have a few slices and not six or seven! Supplement it with a big, healthy salad containing a variety of crunchy and colorful vegetables and you will likely be satisfied. *Energy density* refers to the concentration of calories in a given volume (calories/gram). Foods that are higher in energy density

tend to drive the consumption of more calories than foods lower in energy density. The more water content that food has, the less energy dense it is—for example, two cups of grapes have the same amount of calories as two ounces of raisins, so one is likely to consume more calories if they eat raisins vs. grapes. No matter what you eat, no matter how healthful it is, no matter what the label says (low-fat, carbohydrate-free, dietetic, etc.), the basic truth is if you eat more calories than you burn, you WILL gain weight! With portion control in mind, it is probably best to avoid all-you-can-eat buffets!

You can also add ‘steak houses’ to my list of dining venues to avoid, which includes these all-you-can-eat buffets as well as cruise dining (my sentiments on the out-of-control eating that occurs on cruise ships were clearly expressed in the chapter on exercise). I do not frequent steak houses often, but I recently received a gift certificate to such an establishment from a fellow physician as a token of his appreciation for my providing medical care to his uncle. As I gazed around the restaurant, I became aware of a very club-like atmosphere that I do not care for, and patrons who were generally overweight, if not obese. The waiters all had an arrogant attitude and acted in a snooty and patronizing manner that I did not appreciate. Although the steaks (soaked in butter) were okay, the salad and artichoke heart appetizer were actually better; overall, the experience of watching legions of rotund diners shoving big hunks of meat down their throats led me to an epiphanous moment. The sight was enough to steer me away from beef, if you pardon the pun. I came to the decision that from that point on I would primarily stick to poultry and fish in terms of my intake of animal protein, allowing for some occasional beef consumption, as I am an omnivore at heart.

Mindless Eating: Why We Eat More Than We Think, by Dr. Brian Wansink, provides very interesting data on the psychology of eating. Apparently, many people are clueless

regarding the proper portion size, and not being cognizant of how much food one consumes has largely contributed to the obesity epidemic. Interestingly, the portions that we eat are highly influenced by the *size* of snack packages, plates, bowls, and serving implements—the larger the plate, the bigger the serving spoon, the deeper the bag of chips, the more we consume. Volume of food consumption is very much influenced by how much your dining companion is eating—we often adjust our eating to match our partners! Dr. Wansink believes that *mindful* eating is fundamental to maintenance of a healthy weight. When dining out, he suggests sitting next to the slowest eater and being the last one to commence eating. When attending a buffet-style meal, put only two food items on your plate at a time. When dining at home, he recommends serving the high-calorie foods directly on the plates, but to place low-calorie items like vegetables on the table for family-style serving. He advises never eating directly from a package, but to apportion a reasonable amount onto a plate. He advocates wrapping up tempting foods in a non-transparent wrap such as tin foil—out of sight, out of mind. It is important to learn to eat with awareness and discipline—conscious of the goals of eliminating obsessive thoughts about food, controlling the craving of specific food items, and avoiding overeating.

Another way of conceptualizing eating is *reflexive* vs. *reflective*. Reflexive eating is eating by reflex—with minimal cognitive control, similar to our reflexes, which involve a sensory nerve, spinal cord, and motor nerve without modulation by the central nervous system. Reflective eating involves cognitive control over the primitive reflex—a much more sophisticated process in which conscious thought modulates the reflex. The bottom line is that mindlessly popping potato chips in your mouth while watching television or wolfing down a meal as quickly as possible are examples of reflexive eating that can contribute to obesity, as opposed to purposefully and

reflectively eating a healthy meal with full knowledge of its salutary health benefits and truly appreciating the moment. The object of eating is not to fuel our stomachs as rapidly as we pump gas into our automobile gas tanks, but to eat slowly and with mindful focus that allows us to enjoy and savor the sensual experience! Dining in a group with good conversation ongoing lends itself to a more reflective eating process than eating alone.

The last decade or so has seen the emergence of the popular American concept of “super-sizing”—that “bigger is better”—in terms of foods, sport utility vehicles, mini-mansions, and even in terms of breast implantations! Super-sizing has contributed to the current obesity epidemic, along with the fact that because of technological advances, we burn less energy in getting through the course of the day. Calories add up quickly when portion sizes are increasingly larger and larger—in many restaurants a serving of pasta is now five times the recommended serving size! Bagels have become gargantuan; servings of soda in 7-Elevens are outrageously large (46 ounce *super big gulp*), sugar-laden monstrosities. Many restaurants, particularly fast-food types, advertise their portion enormity—Ruby Tuesday’s *colossal burger*, Hardee’s *thickburgers*, and Burger King’s *triple whopper*, *BK stacker* and *Meat ’Normous breakfast sandwich*, promoted as having *a full pound of sausage, bacon, and ham*! With respect to super-sizing and overindulgence in fast foods, I highly recommend watching the entertaining and enlightening “Super Size Me”—a 2004 documentary in which director Morgan Spurlock’s diet for an entire month is restricted to McDonald’s cuisine. This movie is well worth your 98-minute time investment in terms of learning the shocking effects of poor food choices on our health and well-being.

A general guideline for a reasonable, single serving of protein (beef, poultry, fish), for example, is approximately

the size of a deck of cards; for the entire day on a typical 2000 calorie diet, the recommended portion is equivalent to about 2 decks of cards (6 ounces). Grains such as pasta or rice should generally be consumed in ½ cup portions; you might be surprised to learn that this amount is equal in size to only about half of a baseball. The recommended grain intake is 3 cups daily, the equivalent of 3 baseballs. The recommended fat intake is 2 tablespoons daily, the equivalent of one shot glass. Restaurant meals are generally so large nowadays that a very sensible option is for two people to share an entrée. Richard Snead, the head of the parent company that owns T.G.I. Friday's, recently announced that his restaurants will be bucking the super-sizing trend and offering what will be called "right size" portions—entrees that are about two-thirds the size of the regular entrees. He is banking that Americans are finally ready to eat appropriately-sized rations in these times of rampant obesity.

I am a highly goal-oriented individual who always likes to complete the task at hand; thus, I find that I rarely leave any food on my plate, which is really not too smart! Perhaps I do this because I was brought up being told to finish the contents of my meal because other children all over the world were starving, and I was a good, compliant child (at least as far as eating went!). Perhaps having a Jewish mother had something to do with it!

So, stop eating when you are sated! Don't feel obligated to finish your entrée—there is nothing wrong with asking for a "doggie bag" to bring home the leftovers! Avoid fried meals, since broiled or grilled is far healthier. Also, when dining in a restaurant, go easy on the bread and butter (olive oil is superior to butter or margarine), and try to stay away from cream-based soups and creamy sauces; order the sauce on the side, if possible. And skip dessert or share it up. Just because it is on the menu, doesn't mean it needs to be in your belly! Know when enough is truly enough!

Consume a variety of fresh fruits and vegetables daily! Anything that grows on a tree or in the soil is generally a healthy and nutritious food substance. One reason that diets lower in animal foods are healthier is simply because a vegetarian diet is lower on the food chain and thus contains less environmental toxins (since such toxins tend to get increasingly concentrated as we go higher up the food chain). Anything that is naturally colorful is good. Dark green, leafy vegetables (including spinach, broccoli, kale, etc.) are important as well as orange and yellow vegetables (carrots, squash, turnips, etc.). Fruits and vegetables are low in calories and fat, contain fiber and a variety of nutrients, and are filling, so you'll be hard pressed to gain weight on a diet that substitutes these healthy foods for the more fat-laden, over-processed, calorie-rich, carbohydrate-high products that many of us typically eat. I particularly love citrus fruits. Grapefruit, lemon, limes, oranges—literally embodiments of the sunshine that keeps our planet and all life on it thriving—are extremely healthy and refreshing, make great desserts or snacks, and are a rich source of vitamins, especially Vitamin C and Folic acid, minerals, dietary fiber, and other “phyto” (plant-derived) nutrients. It is always better to have the actual fruit than fruit juices, since the fruit has less calories and more fiber (both soluble and insoluble) and phytonutrients than its juice product. The soluble fiber helps to slow down the absorption rate of food as well as regulate glucose and cholesterol levels. The insoluble fiber shortens gastrointestinal transit time, lessening one's risk for colon cancer as the fibrous materials “brush” their way through. Consider the almost magical properties of citrus present in such products as wood-polishing Pledge or the many citrus-based de-greasers on the market used to clean up oil, adhesives, tars, resins, inks, gums, grease, and waxes. Perhaps in just the same way as citrus is employed as a household and industrial cleanser, it may also function in some capacity to act as fat cleaners or “burners” within our bodies.

I make it a point to often eat a grapefruit as part of my breakfast—to me, it's *sunshine* in a rind. Recently, I chanced upon a nifty product called the *juiceator*, available at www.juiceator.org.uk. Basically, it is a straw-like, perforated device that screws into the top of a piece of citrus fruit, enabling you to drink the juice out without having to go through the trouble of doing manual or electric juicing. The beauty of it is that you don't need a knife or glass to have fresh grapefruit or orange juice. Warning: there is a bit of a learning curve for getting competent with this device! I advise standing over the kitchen sink because you are essentially sucking out the contents of a piece of citrus fruit and, until you master the technique, there is often some sticky citrus spray. It helps to squeeze the fruit while you are simultaneously sucking. I have learned that when most of the juice is consumed, you can pull the juiceator out and use it in a sculpting motion to free up some of the pulp. By replacing the device, you then get a second healthy treat—pulp. Then, I pull the juiceator out completely and, through the access hole I've made, suck out most of the remaining pulp and juice. If you are a dainty and delicate eater, this might not be for you! But it is delicious! I especially enjoy this when I come home thirsty after a tennis match or bike ride. Remember that not all fruits are created equal: be wary of consuming too many dried fruits as these are full of hidden calories. Exercise moderation when it comes to syrupy, sugary canned fruit products—the fresh alternative is always healthier. If your favorite fruit is a *fruit rollup* or *fruit chew*, your favorite vegetable *candy corn*, or your favorite legume a *jelly bean*, well then, you had just better rethink your dietary habits!

Always remember not to douse your salad in too much creamy or oily dressing! Order a salad in a restaurant as your appetizer (dressing on the side!), skipping the other greasy, fried, breaded, cheesy, gooey menu offerings. Consume salt (sodium) and sugar in moderation!

Excessive salt intake can contribute towards high blood pressure, weight gain, fluid retention in the legs, etc. The daily recommended amount of sodium is only about one teaspoon! So watch for the sodium content of prepared and processed foods, including canned soups and deli items. Always keep an eye out for the sugars hidden in many foods in the form of fructose, corn syrup, sucrose, dextrose, etc. Again, the occasional consumption of such foods is fine, but remember to exercise portion control!

I should mention that on most days my lunch consists of some kind of large salad—it offers me an endless variety of healthy foods and great tastes and I don't find myself feeling sleepy and lethargic in the early afternoon as I do when I have a heavy lunch. I also enjoy topping off my veggie bowl with a dessert consisting of an apple or a pear—I really like the crunchiness, great taste, and natural sweetness!

Do not deny yourself any item that you are craving because, if you do so, you may well compensate in a rebound fashion, consuming much more than you would have if you simply ate what you initially desired when you desired it! Suppose that you are at work and there is a birthday cake for a colleague—you do not need to resist eating any; at the same time, there is no need to gorge on a huge piece and break your fitness regimen. Simply have a small slice and enjoy the *quality* of the cake—not the *quantity* of the cake. I had always thought the expression, “*You can't have your cake and eat it too*” to mean that if you eat your cake, you won't have it any more. Well...WRONG! You can have your cake and eat it too—eat a big hunk of cake and you'll have it...on your thighs, hips, and butt, forever more! So eat a cookie or two—just not the entire boxful!

It's at this time that I must confess that one of my “pet sugar peeves” is the donut—in this regard, I have only

one comment (that I cannot claim as original but is so apropos): *“the only healthy part of the donut is the hole!”*; by this, I do not mean the infamous Dunkin' Donut Munchkin holes, but those few cubic centimeters of non-caloric air space within the inner circle of the donut. In other words, there IS no healthy part of a donut! To quote Jack LaLanne, *“You wouldn’t give your dog a donut and coffee for breakfast.”* Try to avoid these fat-laden sugar balls that have absolutely no nutritional value whatsoever. Your body will thank you!

Avoid processed food! When it comes down to wholesome fresh foods versus packaged products, a general rule of thumb is that the more “processed” the food (that is, over-salted, preservative-packed, fat-laden, highly-altered), the less nutritional benefits. The closer that any food item resembles its original and natural state, the healthier it usually is—this is a fairly obvious but often ignored observation. Try to avoid salami, baloney, pepperoni, hotdogs, and other “mystery” luncheon meats—clearly, if someone is grinding up bits and pieces into a homogeneous composite, that someone is trying to hide the presence of some very undesirable components! Believe me, there is a good reason that those miniature frankfurters wrapped in a crust and served with toothpicks are called “pigs” in blankets! Remember, also, that cured meats are full of nitrites and nitrates, purported to form cancer-causing chemicals within the gastro-intestinal tract.

Be moderate with respect to your intake of highly-refined foods, including white bread, white rice, pasta, potatoes, etc.! Avoid white flour products whenever possible. Shift from over-preserved, over-starchy, over-processed, “empty” carbohydrates to natural, nutritious, whole-grain, high-fiber food items, such as 100% whole-wheat bread, brown rice, beans, and other legumes (peas and lentils, for example). Whole grains are now available in many forms, including breads, pastas, rice, cereals, cookies, cakes, and

other snacks—even whole-grain rolls for such things as hamburgers and whole-grain bagels are becoming increasingly available. Remember, “*eating doughy food makes for a doughy abdomen, butt, hips, and thighs*”! Bagels, for example, are packed full of white carbohydrates so, if you want to eat one, at least remove some of the doughy inner contents. It will still taste just as good and be that much healthier. A bialy is also a great alternative, extremely tasty, and with a fraction of the calories of a bagel—I love them!

Quality foods always trump quantity foods! “*Happy meals do not make you happy,*” you can trust me on this one! Avoid fast food, one of the unhealthiest dietary developments of modern times. “*F-a-s-t food is f-a-^{*}t food*”—very unhealthy, greasy, high in trans-fats, calories, and salt—and afterwards, it makes you feel queasy and leaves a bad taste in your mouth and your belly. As articulated by Jack LaLanne, “*Life is like planting seeds—put junk in, junk comes out. Eating nutrient-empty foods is like putting water in the gas tank of your car.*” On occasion, fast food is unavoidable, so if you have no other options (such as when you are traveling), opt for the salads or the broiled, not fried, meal alternatives.

Prompted by the New York City health commissioner Thomas Frieden, a new regulation was established (passed in December 2006), that legally banned all restaurants in Manhattan from using trans fats, a well recognized cause of cardiovascular disease. Additionally, in June 2006, Wendy’s eliminated trans fats from the cooking oil in its USA franchises, and Kentucky Fried Chicken has followed suit. As well, Darden Restaurants, owners of the chains Red Lobster and Olive Garden, recently announced that they will be eliminating trans fats from the fry oil at their restaurants. Striking evidence of the anti-trans fat crusade reaching mainstream America was the announcement by several cruise lines that trans fats will be eliminated from

its cuisine! Complete elimination of trans fats from its menus became effective as of January 2007 for Crystal Cruise lines and December 2007 for Royal Caribbean lines. The New York City Board of Health also enacted a measure that forces fast food restaurants to post the caloric content of their offerings in large type and in easily readable positions. This regulation applies as well to any restaurant with a standardized menu. It remains to be seen whether the shock and astonishment experienced by patrons of fast food enterprises when they realize the amount of calories present in their orders will result in a change to a healthier diet.

A few words on coffee: I have always thought that a beverage that can make you more alert and focused and can help obviate fatigue and prevent car accidents is a good thing—particularly so when that beverage has a great aroma and taste and can warm you up when you're chilled. What an enjoyable *social* drink as well—*let's go out for coffee...*no wonder the popularity of such establishments as Starbucks! Rarely a day is started in my house without that coffeemaker brewing robust coffee before the alarm goes off—what a terrific scent to arise to! Recent studies have documented a variety of medical benefits associated with coffee intake. Coffee is similar to tea in that a natural product, the coffee bean, is grown, harvested, roasted, grinded, and then its essence is obtained in liquid form by dripping boiling water through the grind. Coffee beans contain anti-oxidants that are purported to mitigate cell damage that can cause tissue inflammation, aging, cancer, and death. Surprisingly, a typical serving of coffee contains more anti-oxidants than a serving of blueberries or raspberries, with coffee being the major source of anti-oxidants for many Americans! Coffee consumption lowers the risk for diabetes, cardiovascular disease, and cirrhosis of the liver. Both caffeinated and decaffeinated coffee have been shown to be of equivalent benefit, so the stimulating effect of caffeine does not appear to play a role in the health

benefits of coffee, aside from its salutary effect on staying alert. Do be wary of too much caffeine in terms of high blood pressure and insomnia.

A healthy food lifestyle choice is the increasingly popular Mediterranean “diet”, one that I have incorporated quite naturally without even realizing it simply because it consists of the kinds of foods that I enjoy! This diet has been popular in Spain, France, Greece, Cyprus, Turkey, Southern Italy, and nearby regions for hundreds of years. The Mediterranean diet is composed of minimal processed food, is low in saturated fats, and provides an abundance of healthy unsaturated fats. The Mediterranean cuisine is most appealing to the senses. This eating style includes products that are largely plant-based, such as fruits, vegetables, whole grains, nuts, seeds, legumes, and olive oil. Legumes—including peas, beans, and lentils—are a terrific source of non-animal protein. Soybeans are high in protein and contain a healthy type of fat. Soy is available in many forms— edamame (fresh in the pod), soy nuts (roasted), tofu (bean curd), or soy milk. I personally enjoy soy products and indulge liberally.

My youngest daughter, who generally abhors vegetables and fruit and is one of the pickiest eaters you can imagine, simply loves a delicious bowl of crunchy, bright green edamame. Lightly salted, dried edamame also make for a great snack—they are nutty, very pistachio-like, crunchy, tasty, with favorable stats on the nutritional label, and a nice alternative to other nuts. On occasion, I throw extra-firm tofu into salads in lieu of cheese and often use soy milk as the base for smoothies as an alternative to dairy milk products. I am also a huge fan of hummus, a delicious Middle Eastern appetizer made from pureed chickpeas.

Fish and poultry are also mainstays of the Mediterranean diet, with a limited use of red meats and dairy products. Remember that beef has fat distributed throughout the

cut of muscle versus poultry, which has fat external to the muscle that can easily be removed for the purpose of decreasing one's intake of saturated fats. Lean turkey meat is a great substitute for beef and pork in hamburgers, spaghetti sauce, etc., having a significantly-reduced content of saturated fats.

Medical studies have determined that the consumption of fish or fish oil lowers the risk of cardiovascular death. Fish, either finfish or shellfish, contains a specific type of fat, *omega-3 fatty acids*, thought to be responsible for reducing the risk of cardiovascular disease, stroke, and other medical problems. Omega-3 fatty acids are particularly prevalent in oily fish such as salmon, herring, and sardines. The benefits of fish in the diet can be fully exploited by eating a good variety of fish. One must keep in mind the fact that some fish contain mercury, which can have adverse health effects. Fish that have a high mercury content include tuna, shark, swordfish, mackerel, and bass; recently, significant concerns have been expressed about the mercury levels in sushi (which just so happens to be one of my favorites). So, moderation is advised, particularly with respect to pregnant women, women of childbearing years, breastfeeding women, and very young children. Nonetheless, it is clear that the health benefits of eating fish outweigh the potential risks, so try to include seafood in your diet.

The Mediterranean diet is *high* in the *good* fats (monounsaturated and polyunsaturated), which are present in such foods as olive oil, canola oil, safflower oil, avocados, nuts, fish, and legumes, and *low* in the *bad* fats (saturated fats and trans fats). Olive oil is the principal fat in this diet, replacing butter and margarine. The Mediterranean style of eating also provides an excellent source of fiber and anti-oxidants. Most Mediterranean foods are minimally processed and often produced locally. A moderate consumption of wine is permitted with meals.

Maintaining this Mediterranean dietary pattern has been correlated with less cardiovascular disease and cancer. And it is very easy to follow! It contains “good stuff,” tasty, filling, and healthy, with a great variety of food and preparation choices—you typically bake, broil, steam, sauté, or grill (instead of frying). If you choose to eat red meat, just remember to eat small amounts and lean cuts. Try thinking of soy products as an alternative to animal products. Make an effort to use non-fat or low-fat milk, yogurt, and other dairy products. Limit solid fats, including butter, margarine, shortening, and lard! It’s really very simple...and satisfying!

Another healthy food choice is the traditional Japanese diet, which has been associated with a low incidence of cardiovascular disease. This diet is low in fat, uses abundant fresh fish (thus, lots of omega-3 fatty acids), fresh vegetables, and soy products, but minimal meat, dairy, and wheat products. The variety of colors, artistic style of presentation, and food aesthetics make Japanese cuisine very appealing to the senses. I am a huge fan of Japanese food and try to eat it a few times per month. Truth be told, any traditional diet, including French, Italian, Greek food, etc, generally has more wholesome and healthier food components than the Western diet.

Eating right and eating well is really not all that difficult. It’s actually easy: it simply requires a little effort and mindfulness. Learn a few rules, apply them, read labels, alter dietary choices—it’s not rocket science! Being a *conscientious* eater is one of the most important things that you can do to promote your good health and longevity.

The “W” test is useful for assuring mindful eating: What? Where? Why? When? Always be mindful of *what* exactly it is that you are eating. Make sure that it is high-quality nutrition and fuel and not chemical-laden junk. Also consider *where* you are eating—mindless munching while

lying in bed reading, sitting in the chaise lounge watching television or while driving might not be the smartest behaviors, particularly if you have a weight problem, as opposed to conscious consumption in the kitchen, dining room, or restaurant. An essential question is: *why* you are eating? One's motivation for eating should be hunger or for purposes of re-fueling, not for other reasons, like ill mood, anxiety, depression, drug or alcohol-induced stupor, etc. *When* is also an important consideration—"when" should be *when* you are truly hungry, which is hopefully not late in the evening (definitely not a good habit if you have weight issues).

"Food is a drug—use it wisely!"

Ray Kybartas

The "pearls" or nuggets of this chapter are thus as follows:

- ✓ Read nutritional labels carefully.
- ✓ Before it gets beyond your lips, consider if the food item is something you really want to consume and determine that it is of sufficient quality to become you.
- ✓ Quality foods trump quantity foods.
- ✓ Eat only when you are hungry, avoiding promiscuous, dysfunctional, and mindless eating.
- ✓ Eat nutritious snacks.
- ✓ Keep healthy foods accessible, junk food inaccessible.
- ✓ Do not skip meals!
- ✓ Exercise portion control!
- ✓ Fruits and vegetables rock—strive for bright colors.
- ✓ Citrus fruit is awesome!
- ✓ Fresh fruits trump fruit juices.
- ✓ Fresh is always better than frozen or canned.
- ✓ Go light on creamy dressings and sauces.
- ✓ Salt and sugar in moderation.
- ✓ Consume animal fats, including whole milk dairy products (cheese, butter, cream), in moderation—try to substitute vegetable protein for some of the animal protein in your diet, particularly soy products.

- ✓ Consume beef and unskinned poultry in moderation; use skinless poultry and consider substituting lean turkey meat for beef or pork.
- ✓ Low fat or non-fat dairy products trump whole milk products.
- ✓ Minimize consumption of tropical oils (coconut and palm).
- ✓ Baked, broiled, sautéed, steamed, poached or grilled is preferable to fried or pan-roasting foods.
- ✓ Avoid processed food, highly-refined foods, and empty carbohydrates.
- ✓ Whole-grain products trump refined products.
- ✓ Avoid trans fats and partially hydrogenated vegetable oils (margarine and shortening), high fructose corn sweetener and refined flours.
- ✓ Consider using extra virgin olive oil as your main source of fat.
- ✓ Avoid fast food and junk food.
- ✓ “Flesh” foods that feed in the wild trump those that are commercially farmed (salmon, poultry, pigs, cows, sheep, etc.).
- ✓ The Mediterranean diet rocks (as do many other traditional ethnic diets).
- ✓ Eat fish several times per week, particularly those containing omega 3-essential fatty acids, such as salmon, herring, mackerel, and sardines (do be wary of excessive mercury consumption).
- ✓ Shake it up—eat a wide variety of different foods.
- ✓ Enjoy your coffee!
- ✓ Get out of the supermarket and into the farmer’s market.

To my list, I would like to add nuggets of wisdom obtained from the superb book and invaluable resource authored by Michael Pollan entitled: *IN DEFENSE OF FOOD: An Eater’s Manifesto*:

- Avoid food products that contain ingredients that are unfamiliar, unpronounceable, more than five in number or that include high fructose corn syrup.

- Avoid food products that make health claims, typically indicative of processed food versus a whole food.
- Shop the peripheries of the supermarket and stay out of the middle, since generally the processed products dominate the center of the store and the fresh foods line the walls.
- Eat mostly plants, especially leaves (versus seeds—high in omega 6 fatty acids) as they are a great source of antioxidants, phytochemicals, fiber and omega 3-essential fatty acids.
- Remember that you are what you eat “eats”, meaning that the diet of the animals that we eat influences the quality of the food, so you are better off eating beef from a grass-grazed cow than a corn-fed cow.
- Eat like an omnivore as diversification will enhance your ability to ensure proper nutrition.
- Eat well-grown foods from healthy soils that have been nourished by organic matter versus synthetic fertilizers.
- Eat wild foods if you can, including wild greens and animals.
- Eat more in accordance with traditional food cultures than the Western diet.
- Have a glass of wine with dinner.
- Eat meals *together* in the social way we were meant to eat, not in the car or while watching television and try to avoid eating alone if possible.
- Eat at a table.
- Eat slowly, deliberately, and with the satisfaction and enjoyment of consuming well-grown and well-prepared food in a communal fashion.
- Cook and, if possible, cultivate your own garden.

In addition to traditional grocery stores and supermarkets, natural and organic food grocers are cropping up all across the nation. Organically-raised animals tend to be leaner and have a better profile of fatty acid content in their fat; likewise, wild fish have better nutritional value than farmed fish, which are raised in unnaturally crowded pens where

antibiotics are used routinely and the hazards of pesticides stored in their fat are very real. Think about it—fresh wild salmon—chinooks, sockeyes, and cohos—who have spent their lives swimming freely in the cold Pacific Ocean vs. farm-raised salmon, raised in packed “feedlots” and fed a diet consisting of fish pellets and other less than optimal products.

Organic principles include allowing animals to graze in an open pasture as opposed to being cooped up in a tiny space and fattened in feedlots, and banning the use of hormones, antibiotics, and pesticides. Our health can be adversely affected by residues of these drugs in the meat and animal by-products that we consume. Of recent, more and more dairy companies are no longer obtaining milk from cows treated with genetically-engineered bovine growth hormone known as *Posilac*, which can increase a cow’s milk production by a gallon or more per day. Organic produce and meats are most likely healthier for us in terms of better nutritional content and less pesticide infiltration than conventionally grown food. Although organic foods are more expensive, they are far better for the environment and far kinder to the farm animals. So, if at all feasible, shop organic. Eat well to live well!

I am pleased to say that there is a movement underway, rapidly gaining momentum, regarding the importance of healthy eating habits in children. Essentially, a school food revolution is occurring, fomented by federal reports that one in six school-age children is overweight, and that type 2 diabetes will run rampant if the current trend is not combated by change and intervention. A new federal law enacted in July 2006 now requires public school districts that receive subsidies to develop wellness policies outlining nutritional and exercise goals. As a result, schools are promoting healthier menus that attempt to eliminate “mystery” luncheon meats, processed foods, trans fats, partially hydrogenated vegetable oils, and high

fructose corn syrup. Many school districts have already completely eliminated sugary drinks. My home state, New Jersey, recently banned sodas, candy, and other foods having minimal nutritional value and high sugar contents from school cafeterias and vending machines. It makes so much sense to me that schools, being the cornerstone of the learning and educational process, should not only have some responsibility in educating our children on healthy dietary and lifestyle choices, but also to back this up with healthy menu choices in their lunchrooms.

Additionally, public health agencies are pushing for strong measures to control obesity. When a health problem is related to tobacco, lead paint, asbestos, bacteria, or other health hazards, aggressive public health measures are undertaken to protect the public from exposure. The truth of the matter is that an unhealthy, fat-laden diet is *no* different from these other hazards in inducing an array of health problems associated with significant morbidity and mortality. It has been proposed that legislation should be enacted in an effort to prevent obesity. In addition to the school reforms mentioned previously, other considerations are the following:

- Easily comprehensible nutritional labeling required for all foods, including those served in restaurants.
- Legal action against deceptive practices and false claims, particularly with respect to fast food and the enactment of zoning laws to limit the prevalence of fast food outlets.
- Regulation of food marketing practices to children and adolescents.
- Possible taxation on calorie-dense, nutrient-poor foods to discourage consumption.
- Financing of recreational parks, bike paths, and other accessible exercise venues.
- Provision of incentives to establishments that offer nutritious and affordable food.

We are most fortunate to be alive. We only go through life once, so it behooves us to eat quality, nutritious foods that will provide us with energy and the proper balance of carbohydrates, proteins, fats, vitamins, and minerals to allow us to live a healthy and long existence. We are responsible for determining our own food destiny in terms of our food choices—so make smart ones! Good eating is a lifelong experiment that should continue to evolve if one pursues eating with a mindful and intelligent attitude.

Chapter Six

WEIGHT MATTERS

*“Heart disease comes from being f-a-t. F-a-t-a-l.
People need to make good food choices.”*

Jack LaLanne

The Journal of the American Medical Association (JAMA) has an extremely interesting column every week that is a reprint of a “classic” JAMA article originally written 100 years before. It’s always fascinating to see how previous generations thought and lived within the context of the social, economic, psychological and medical issues of their time. A recent reprint (originally dated April 14, 1906), was entitled “Weight and Health.” My natural inference before reading the article was that it would be about obesity being responsible for health difficulties. Well...au contraire—I was quite shocked to discover that the article was, in fact, about how *low weight* (emaciation) must be carefully watched for and evaluated as it might be a sign of many diseases, including being a potential indicator of tuberculosis, diabetes, atherosclerosis, and nervous conditions! Just a few generations later, literature on the topic of weight vis-à-vis health is almost always about *obesity*. In an amazingly short amount of time, we have gone from the breadlines of the Depression era to war-time food rationing to a situation in which many Americans are overfed yet undernourished on a calorie-rich and nutrient-poor Western diet!

We are currently facing an epidemic of obesity among adults and children alike, creating a set of health problems the likes of which have never been seen before. Times sure have changed, but then again, so have we in terms

of our eating and exercising habits. Adult obesity rates have continued to rise in over 30 states each year. Number one is Mississippi, with an obesity rate of approximately 30%. Colorado has the distinction of being the least obese state, with an obesity rate of a little over 15%. It is no wonder that some refer to the USA as the *United States of Obesity*! We are a nation chock full of “people of size” and the “stylishly stout.” It is only recently that bariatric (weight loss) surgery has emerged as one of the fastest growing surgical specialties. In 1998, approximately 12,000 gastric bypass or banding procedures were performed; in 2004, the number soared to nearly 140,000!

“If we continue on this same path, the results will be devastating to both the health of the nation and to our healthcare system.”

Dr. Julie Gerberding,
Director, Center for Disease Control

A healthy weight is an essential component of maintaining wellness, fitness, and youth. *Civilization Syndrome* is a cluster of health issues that have arisen as a direct result of our sedentary lifestyle, which supports overeating, physical inactivity, and a stressful existence. This malignant combination will often lead to obesity, insulin resistance, high blood pressure, and elevated cholesterol. As a result, health problems including diabetes, heart attack, stroke, cancer, and premature death have become increasingly prevalent. Gaining weight contributes to *Metabolic Syndrome* and is strongly correlated with cardiovascular disease and premature death—almost 50 million Americans, including 50% of persons older than 60 years of age, suffer with this syndrome, which is defined as having three or more of the following: high glucose; high triglycerides; low levels of the “good” cholesterol (HDL); abdominal obesity; and high blood pressure. There are innumerable other non-cardiac ramifications of obesity including breathing difficulties, obstructive sleep apnea,

arthritis, back pain, gastro-esophageal reflux, venous stasis with skin ulcers, etc. The burden of carrying excessive weight is definitely dangerous...and potentially fatal!

As a urologist, on a daily basis, I sadly witness the adverse effects and ill consequences of America's bulging waistline. The obese patient presents a real challenge, for example, to the urological surgeon in terms of care both during and after an operation. Surgery on overweight patients is more complex and takes longer as it is much more difficult to achieve proper exposure of the anatomical site being operated upon. Surgery on obese patients has a higher complication rate with increased respiratory and wound complications. Anesthesiologists have more difficulty placing the breathing tube through a thick, obese neck, and greater difficulty with regional anesthesia as well, because of fatty tissue obscuring the landmarks to place the needle access for spinal anesthesia.

In urology, we are witnesses to a strong correlation between obesity and prostate enlargement. Carrying excessive weight is also a risk factor for erectile dysfunction, with obese men having a much greater incidence of sexual dysfunction as compared to non-obese men. Being even moderately overweight has been clearly linked to the severity of urinary incontinence. In fact, weight loss is typically the first line of treatment for sexual dysfunction and incontinence. Obesity will also significantly increase one's propensity for developing kidney stones. Additionally, beyond a certain weight limitation, we cannot treat certain "larger" patients with the standard, *non-invasive* shock wave lithotripsy to break up a kidney stone and must, therefore, resort to more antiquated, more invasive, more risky measures. Bottom line: fat puts one at risk...for many very unfortunate potentialities.

Of course, many people experience minor weight fluctuations that often vary from season to season—I, for instance, tend to gain a few pounds over the more sedentary winter months, but always get back into “fighting” shape in the spring. I have to...I feel better, look better, and know I am reducing my chances of falling prey to “fat fatalities.”

What must you know to remain at a “normal” weight? There is a simple but elegant formula for weight loss: ***expend more calories than you take in.*** So, eat less and burn more calories, most readily achieved, of course, with exercise! Yet, while exercise is extraordinarily important—I truly believe that it is the most underrated and fundamental means of maintaining wellness and promoting longevity—the real key to weight loss is consuming less calories. The reason is simply that it is so much easier to consume calories with eating than it is to burn calories by exercising, so that eating less becomes a more efficient means of facilitating weight loss than exercise. This is not to say that exercise is not an essential part of a weight-loss regimen. Truth is, *“If you are trying to lose weight, the best exercise you can do is to exercise ‘restraint’ when it comes to your eating choices!”*

That being said, the situation is actually more complex than it appears at face value. Recent studies have shown that obese people who lose weight will often gain the weight back in the same manner that thin people who are forced to gain weight ultimately will lose the weight because our metabolisms speed up or slow down to keep our weight within a narrow range. So, the obese person who loses weight ends up with a substantial reduction in metabolism and the thin person who gains weight ends up with a similar gain in metabolism. Other studies have demonstrated the dominant influence of genetics on weight significantly superceding the influence of environment. Thus, the propensity for being fat is essentially an inherited

condition to some degree. (This information is excerpted from Gina Kolata's book, *Rethinking Thin: The New Science of Weight Loss — and the Myths and Realities of Dieting*.)

Is it possible to be fit and fat at the same time? The answer seems to be a resounding “yes”. There are many people who are carrying an extra 20 pounds or so who work out on a regular basis and are fit from a cardiovascular viewpoint. In fact, there are many professional athletes who are clearly carrying the burden of extra pounds. Steven Blair, a director of the Cooper Institute, studied the *fat and fit* cohort and arrived at the following two important conclusions:

- Fat men and women who are fit live longer than slim men and women who are not fit.
- Fat men and women are always *less* likely to be fit than slim men and women.

So, the best of all worlds is fit/slim, then fit/fat, then unfit/slim, then unfit/fat!

Regarding all the ridiculous, outrageous, unbalanced, and unhealthy weight loss programs out there, I have but one comment: *If it sounds too good to be true, it is; not probably, but definitely!* Do not waste your time with fad diets or fad weight-loss pills! Or fad fat-burning machines! Be smart! There are no shortcuts! Proper eating patterns are a long-term, lifetime pursuit; weight gain is usually gradual and insidious, and weight loss, accordingly, should be sensible and gradual!

A March 2007 article in the *Journal of the American Medical Association* by Christopher Gardner, et al., compared four popular diets in a population of overweight and obese premenopausal women. The diets that were compared were the following: *Atkins* (very low carbohydrates, high protein, and fat); *Zone* (low carbohydrate—40% carbohydrate, 30% protein, 30% fat); *LEARN* (Lifestyle, Exercise, Attitudes, Relationships and Nutrition—55-60% carbohydrate, < 10%

fat); and *Ornish* (<10% fat). The bottom line is that the Atkins diet, which had the lowest carbohydrate intake, was associated with the greatest weight loss and the most favorable metabolic effects one year after commencing the study. The take-home message is that if you want to lose weight, think long-term and remember that the *source* of calories counts, as a low carbohydrate diet facilitates weight loss. It would seem that carbohydrate calories have a tendency to make us fatter than do protein and fat calories do. So, to our simple but elegant formula for weight loss, “***expend more calories than you take in,***” add the following caveat: “***but watch your carbohydrates.***”

Instead of weight, the buzzword now is **BMI**, which stands for **Body Mass Index**. This index formula was invented by a Belgian statistician and astronomer named Quetelet in the 1830s, and in the 1980s this index was ultimately adopted by public health agencies to screen for people at risk of diabetes, high blood pressure, heart attacks, and stroke.

BMI equals weight (in kilograms) divided by height squared (in meters). For example, I weigh 155 pounds (70.31 kilograms) and am 5 feet 9 inches tall (1.75 meters). My BMI is therefore $70.31 / (1.75 \times 1.75) = 22.9$. If your BMI is 18.0-24.9, this represents a *healthy* weight. If it is from 25-29.9, you are considered *overweight*, which makes you a member of a club that approximately 127 million Americans have joined. If it is more than 30.0, you are considered to be *obese*, which makes you a member of a club that about 60 million Americans have now joined. If your BMI is more than 40.0, you are considered to be *extremely obese*, which makes you a member of a club that now comprises almost 10 million Americans. WOW!

If you want to figure out your BMI without using a calculator, go to www.nhlbisupport.com/bmi and plug in your height (in feet) and weight (in pounds).

BMI has been criticized for its shortcoming of being unable to differentiate between an obese individual and a heavily-muscled one. Take, for example, my friend Frank, a sports-injury orthopedic surgeon—he is about my height but weighs around 205 lbs., a hefty 50 lbs. more than me—like many orthopedists, he is built like a Sherman tank. By BMI standards he is obese, but I can swear to you that he is one solid muscular guy with calves easily twice the size of mine and minimal body fat! And can he cycle! Arnold Schwarzenegger had a BMI of 33 when he was Mr. Universe, so clearly this index is not a perfect measure.

My take on all of this is that you can scratch the scale, tape measurer, calculator, and BMI calculation. I contend that BMI should not stand for body mass index, but should be an acronym for **Body Mirror Image**. So, simply take your clothes off and stand in front of a mirror. If your personal “court of justice” tries and convicts you in the venue of your own bathroom and you are able to admit to yourself that your body habitus resembles that of Jabba the Hutt, then it just may be time to consider easing back on the calories! When you shower, look down and take a good gander at your body. Can you even catch a glimpse of your toes? Pinch your waist and hip lines. How many “inches can you pinch”? If you’re grabbing a handful, it’s time to take your hand out of the cookie jar! Be honest with yourself! You will be your best judge and jury...you don’t need machines or fancy numeric formulas to tell you what you more than likely already know.

“If you look down and can’t see your penis, then you are fat.” The Jaffin twins, Camp Moosilauke, 1968

(The above comment, of course, refers to men only!) *As a urologist, I see many men who complain that their “penis is shrinking.” On occasion, this may be the case, as disuse atrophy (“use it or lose it”) can affect the muscle of the erectile apparatus of the penis; similarly, radical prostatectomy can*

sometimes foreshorten the penis. HOWEVER, most of the time, a shrinking penis simply signifies an expanding abdomen, with the penis hiding behind a generous pubic fat pad, like a turtle retreating into its shell! If any man out there needs another reason to maintain a healthy weight, well, here it is!

Also, if you are in good shape, your clothes should continue to fit. If you start noticing that your pants, skirt or belt are getting a bit snug, it is time to think about losing a few pounds! It always works for me. This is not to say that you shouldn't weigh yourself periodically. A minor weight gain may be detected on the scale before becoming visible in the mirror or resulting in your clothes becoming tighter. Remember—it is always better to address weight gain by *nipping it in the bud* before it gets out of hand. Four or five pounds are definitely much easier to lose than 40 or 50! Do everything you can not to allow yourself to get to the point where weight gain is so great that weight loss seems virtually impossible!

Interestingly, longevity has been shown to be increased in many animal species subjected to caloric restriction—whether this is relevant to humans remains the million dollar question. It is theorized that caloric restriction triggers a biochemical alarm that directs cells to channel energy away from *cellular reproductive function* and towards *cellular maintenance function*, including repair of mutations and the neutralization of potentially dangerous free radicals. In any case, when it comes to weight, less is usually better than more.

Chapter Seven

PROACTIVE PREEMPTIVE CARE:

A Stitch in Time Saves Nine

JCF: Age 77

I was born and raised in the Bronx, New York on 5/20/29 in Fordham Hospital. My Dad died at age 63 in 1963 of kidney cancer; he was one of 10 children. My mother passed at 88 in 1995. She was one of three siblings raised in an orphanage, with her brother and sister dying at ages 18 or 19 from TB in the late 1920s. I am the oldest of seven—two deceased twin sisters: one died at 14 days old, the other at 4 months in the early '40s.

I have been very active all of my life: a member of the YMCA from 12 to 20 years of age; I played all sports—sandlot, H.S. track, etc. I am a Korean veteran, member of the 82nd Airborne. I played football and baseball in the service, then came out and played semi-pro football and baseball for 8 years until I married. I have 3 children and 5 grandchildren.

My occupation was a printer in a publishing company for 47 years.

I have never smoked, am a moderate drinker, take 5-6 vitamins a day. I am not crazy about desserts—good, wholesome breads are my weakness. I still work out dating from my early years, averaging 5 days a week. I try for 7! I do ½ hour bike; ½ hour treadmill. My hobbies are barbershop singing quartets/chorus (for 55 years), and crossword puzzles—these 2 hobbies keep me active and I enjoy them a lot. My 5 grandchildren also keep me young and busy. Of course, the biggest plus is being married to a nurse—she helps keep me healthy!

I have 4 great physicians: an internist, who I try to see twice a year for a physical, etc.; a urologist, who I see at least once a year; an ophthalmologist for eyeglasses, etc., that I see yearly; and a dermatologist, who I see mostly in the summer months. I hope I do everything I'm told by all my doctors as I respect them all and their knowledge and I feel I'm in good hands!

General Preventative Maintenance

Preventative maintenance today can eliminate the need for major repairs later; statistics bear out that women practice this health maintenance, in part, by seeing physicians on a much more regular basis than men. No wonder their life expectancy is, on average, more than five years greater than men's—they work at it! The average American man lives 75.2 years; the average American woman 80.4 years—this represents a pretty impressive longevity gap. Men die off at a much faster rate than women such that by age 100, the ratio of women to men is 8:1, at least in this country!

Men, generally speaking, are masters of denial who are socialized to play the stoic, tough guy, independent, cool-as-a-cucumber, stubborn, non-demonstrative, too-proud-to-ask-directions act. After all, we often assume the roles of provider, protector, hunter, and warrior as opposed to our nurturing and emotional gender mates. Furthermore, we men are *tainted* by testosterone levels that can oftentimes impair our ability to think rationally. Deep inside, most of us males are a bunch of weak-kneed milquetoasts who are put to shame by women when it comes to true bravado!

Not to denigrate the male gender, but there is absolutely no question that women are truly the tougher breed, certainly much better tolerant of illness and pain. Let us all shout, “thank you” for the ability of women to

menstruate, achieve pregnancy, bear children, nurture, and raise families. Thank you for mothers! I readily admit that I am eternally grateful that I did not have to give birth! I am extraordinarily beholden to the powers that be that I have a prostate and not a uterus! But, let's face it: we men still need to get our parts checked out. Come on, guys! It's time to be smart when it comes to health care!

This is not to say that we doctors are wizards, miracle workers, or deities who can magically fix all the aches and the pains, traumas and tribulations, and conditions—both benign and malignant—that plague us all. We are simply human beings, not perfect or infallible, who are trained to do our best to promote health and manage diseases. There are a lot of things that we cannot do, but there are certainly many, many things that we *can* do. Given this, I strongly believe in the merit and importance of an annual physical examination, starting at age forty for most—men and women alike. I, for one, am a doctor who does not like going to doctors. I am not happy being subjected to even the most minor procedure, such as having my blood drawn—I look away and wince; because when it comes right down to it, I am really just a big baby. I despise the digital rectal examination. Every May my internist reminds me of just *how* much I hate it when he comes at me with his big stubby finger—I literally see stars! I truly beg that I am gentler to my patients than he is to me! All this notwithstanding, I still see him every year to stay on top, as much as I can, of my physical well-being.

Equally, I recognize the importance of proactive routine maintenance as being a vital component of maintaining wellness. Here is the key, a concept that many patients seem surprised to learn: *Not all disease processes—even extremely serious ones—are associated with symptoms*; to wit, prostate cancer is almost always discovered via an abnormality on the PSA (Prostate Specific Antigen) blood

test or through an abnormal physical exam (a rough spot felt on the prostate on digital rectal examination), as it typically causes neither pain nor any other symptoms that would suggest a problem.

A word on my father: At age 65, my father's PSA test showed an abnormal elevation and a significant change from his previous PSA. This prompted a prostate ultrasound and biopsy that demonstrated prostate cancer. Fortunately, this was found to be an early, organ-confined prostate cancer and he underwent surgical removal of his prostate gland. He is now 76 and cancer-free with an undetectable PSA, indicative of cure of the cancer. Since my father had prostate cancer, it puts me at higher risk for the disease than someone with no family history. So, what do I do? I see my internist annually for the PSA blood test and DRE (digital rectal exam), maintain a healthy lifestyle, and take Finasteride (more about this later).

The same applies to *high blood pressure* (hypertension), *high intra-ocular pressure* (glaucoma), and *cervical cancer* (which is easily picked up in its earliest phases by a Pap smear). If you don't go actively hunting for these conditions, you're more than likely not going to find them—and by the time you do experience a symptom, it may just be too late.

The first symptom of unrecognized hypertension may be a stroke; unrecognized glaucoma may “suddenly” present with loss of vision. Recently, for example, experts have pondered treating *pre-hypertension*, a condition in which blood pressure is in the high-normal range but below the true hypertension threshold. This is defined as when the systolic blood pressure is 120-139 and the diastolic 80-89—such “pre-hypertension” *clearly* puts one at risk for cardiovascular disease; and although these patients are not candidates for drug therapy, they are now being advised to practice lifestyle modification to reduce their

chances of developing full-blown hypertension in the future. The lesson here: pick up problems early, nip them in the bud, and manage them.

A word on my sister: my sister is four years younger than me and an exercise and nutrition maniac—a seven-day-per-week fitness fanatic who runs 6-8 miles daily at a very fast pace and, when forced to exercise indoors, favors spin class. She eats better than anyone I know—an insanely strict diet, primarily vegetarian with more vegetable and fruit consumption than is imaginable. Sugars and starches are her enemies! She is truly a ‘hard body’—five feet five inches tall, weighing 115 solid pounds with minimal body fat. In all honesty, she even makes me look like a couch potato! Shockingly, she recently was diagnosed with extreme hypertension—to her amazement as well as everyone else’s. Believe me, with her diet, exercise regimen, and lifestyle, she is absolutely the last person on Earth you would peg for having uncontrolled hypertension! She is currently on medication and is fortunately doing fine. The moral of this story is that lifestyle measures are just sometimes not enough to overcome powerful genetic forces; additionally, never assume you are infallible even if you are in superb physical condition—indulge yourself in routine preventative maintenance measures on a regular basis to allow prompt diagnosis and treatment of conditions that often do not manifest with symptoms, yet are potentially lethal.

It is certainly also worthwhile knowing your *complete blood count*, *glucose* and *electrolytes*, and *cholesterol* and *lipid profile*, as proper monitoring and treatment, if necessary, will minimize your risk for cardiovascular disease. So, once per year, I place myself completely in my internist’s hands, and let him poke and probe me, give him free access to all my orifices, and let him scrutinize my blood, urine, and any other body fluids he deems appropriate. If he suggests a referral to a cardiologist or other specialist for more focused testing, then I will follow his advice carefully,

as I know that he has only my best interests in mind. And if the cardiologist should suggest a *high-sensitivity C-reactive protein blood test*, *stress testing*, *electron-beam computerized tomography of the heart*, or *carotid ultrasound* to help make an early diagnosis of asymptomatic atherosclerosis, then I will entrust my care to the judgment and experience of this expert.

On an annual basis, I see my *ophthalmologist* and let him test my vision exhaustively—I relish my ability to see...and see clearly! It is prudent to see a *dermatologist* periodically in order to do a comprehensive skin examination and ensure that any moles and skin lesions, particularly those out of your visual realm, do not represent trouble. For all you women out there—young and old, sexually active or not—I needn't tell you the importance of seeing your *gynecologist* annually. *Mammograms*, *pelvic exams*, and *Pap smears* can help diagnose a problem long before symptoms manifest. Colo-rectal cancer screening via *colonoscopy* is capable of detecting pre-cancerous polyps or an early cancer long before symptoms will occur. *Bone density testing* can pick up osteoporosis early so that appropriate measures can be taken to lessen one's risk of fracture. It is worthwhile seeing an *audiologist* to assess your hearing, particularly if you are over 50.

Professional dental care is essential for your health; obviously, too, self-dental care via regular teeth brushing and flossing is of great importance. Nineteenth-century slave owners inspected the teeth and tongues of potential slaves before deciding whether they were fit for hard labor because past experience had demonstrated that oral health generally provided a good insight into general health. It is true that many systemic conditions have dental and oral signs and symptoms—studies have shown an association between gum diseases and diabetes, cardiovascular disease, and stroke. So, dental health can be a microcosm of one's overall health. The bottom line is to see a dentist

and continue doing so on a regular basis. Every six months works for me. I don't particularly like it, especially the ultrasonic cleanings, but I endure it because I know my dentist is on my team.

This next issue, hopefully, is news to no one but is still worthy of mention—we have come a long way on the *immunization* and *vaccination* front, wiping out a significant number of diseases completely. Is this a no-brainer or what? In children, vaccines have been among our most effective interventions to protect individual as well as public health. What a great means of reducing your risk for certain infections that are potentially lethal, if not capable of incurring significant morbidity! Vaccinations are now available for hepatitis A and B, diphtheria, tetanus, pertusis, polio, hemophilus, measles, mumps, rubella, varicella, meningitis and, most recently, cervical cancer/human papilloma virus. News flash: vaccines are *not* just for children—vaccines for adults include those for influenza and pneumococcal pneumonia and, as of July 2006, for herpes zoster (*shingles*). Go to your physician and discuss the merits of getting some, if not all, of them!

Listen carefully to your own body! The truth is, nobody knows your body or, hopefully, cares more about it than you do. Believe me—if you are paying attention, you are much more in touch with your body and its subtleties than any physician will ever be! If you are having abnormal symptoms that persist, get them checked out, the same as you would do for your car if it was having a problem! Seriously, if your car was leaking fluid onto your garage floor or making a strange noise, you would readily get it looked at. Translation: it is always better to be extra-careful than neglectful, to even, if it turns out, err on the side of caution—I promise you that no physician will think less of you for it. You may not know that emergency rooms now manage heart attacks on a strict protocol basis in similar fashion to gun shot wounds. In other words, there

is a definitive time window that needs to be strictly adhered to in order to prevent the blockage in coronary artery flow from damaging the heart muscle—this may require the immediate utilization of certain medications or cardiac catheterization, angioplasty, or stenting. So, promptly diagnosed and treated, a heart attack does not need to progress to an injured cardiac muscle, just as a gun shot wound does not always need to result in fatal bleeding. Please take this advice to heart, literally!

A word on my brother: two years younger than me, Rick holds combined MBA/MHA degrees and is the practice manager for a group of more than 25 cardiologists in Atlanta. He has always been an excellent athlete and in high school was a wrestling star and captain of the tennis team. Although he has put on a few pounds since his teenage wrestling glory, he has managed to be a very active adult who participates in many sports, and to this day remains a very intimidating tennis player, one whom I can occasionally whittle a few games off...but no more than that!

A few years ago, while playing softball, he felt light-headed almost to the point of passing out at the time of lunging for a ball. Then, he actually passed out on a few other occasions—once while walking up a flight of stairs and another time while walking in the street. He also began experiencing shortness of breath after mild exertion. After thorough testing, he was diagnosed with hypertrophic cardiomyopathy (HCM). This is a condition often associated with sudden death in young athletes. When you hear about a high school or college athlete dying during summer training, hypertrophic cardiomyopathy is often the cause. Essentially, thickening of vital areas of the heart muscle, including the left ventricle and septum, causes obstruction to the outflow of blood from the heart to the aorta. Not only is cardiac output compromised, but there is a much increased prevalence of cardiac arrhythmias.

Rick went to Charleston, South Carolina for treatment, where a cardiac catheterization was performed and alcohol was carefully injected into the coronary artery supply to the abnormally thickened heart muscle; this resulted in ablation (destruction) of the thickened muscle that was responsible for the obstructed blood flow. Additionally, an ICD (implantable cardioverter defibrillator device) was placed to treat any further arrhythmia that could potentially occur.

My brother is absolutely perfect now, back to all athletic activities and still kicking my butt in tennis as soundly as ever. The moral of this story is to carefully pay attention to what your body is telling you—we have one precious life to live, and by staying in tune and reacting appropriately, you will be able to maximize your longevity. HCM tends to have a genetic basis, so, after Rick’s diagnosis, I promptly saw a cardiologist who performed a stress echocardiogram; fortunately, it revealed that my heart was normal.

Obviously, there are certain areas of our bodies that are very amenable to self-examination. It is essential that young women learn how to do a breast exam and that men learn how to do a testicular exam—and that they keep on doing them. Don’t ever dismiss persistent pain! For example, testicular pain may merely represent a pulled groin muscle; but it can also be a sign of an infection of the testicle, or even a testicular torsion—which is a twisted testicle that is considered a surgical emergency and can result in the loss of the testicle if not addressed expeditiously. As far as I am concerned, it is better to be a bit of a hypochondriac than a stoic denier! Persistent abdominal pain should always be taken seriously—for example, several years ago, my wife had significant, unrelenting abdominal pain that was found to be on the basis of a twist in the mesentery of her intestine, requiring emergency, life-saving surgery. Lesson to be learned: it sometimes is *not* just a stomachache (so the cliché, “better safe than sorry”)!

Remember—many symptoms can have a myriad of different causes, some minor, some serious; you may need the help of a physician to help sort this out. For example, urologists will see many patients in consultation in the office with blood in the urine (referred to as *hematuria*), sometimes with visible bleeding, other times seen only under the microscope. There are numerous possible underlying causes, ranging the gamut from an innocuous urinary tract infection to kidney or bladder cancer, all of which can be differentiated by a few simple tests done in the office. So see your doctor!

Pay attention to *all* of your bodily functions! *Any* system not working properly can be a sign that there are more central issues at hand. For example, difficulty obtaining or maintaining erections may actually be a harbinger of cardiovascular disease—the quality of erections can, in fact, serve as a barometer of our cardiovascular health. In other words, the presence of erectile dysfunction (E.D.) can be considered the equivalent of a *penile stress test* and may be indicative of an occult cardiovascular problem that warrants an evaluation for arterial disease elsewhere in the body (heart, brain, aorta, peripheral blood vessels). The presence of erectile dysfunction is as much of a predictor of cardiovascular disease as is a *strong family history of cardiac disease, tobacco smoking, or elevated cholesterol*. The British cardiologist Graham Jackson has expanded the initials E.D. to mean *Endothelial Dysfunction* (endothelial cells being the type of cells that line the insides of arteries), *Early Detection* (of cardiovascular disease), and *Early Death* (if missed). Bottom line: when our bodily functions are awry on a consistent basis, get them checked out pronto!

My Friend Richard

Here is the frightening story of Richard, a plastic surgeon, and a close friend of mine. I am indebted to him for doing

a great deal of wonderful reconstructive surgery on my wife and for being a tremendous source of comfort and strength during a very difficult time in my and my family's lives. When Richard turned forty, he called me to inquire about urological health, specifically asking me what he should do at this age on a preventive basis. I mentioned the usual digital rectal exam and the PSA blood test to screen for prostate issues, urine analysis to screen for blood, protein, infection, etc., but also mentioned that almost all of the kidney tumors that we currently diagnose are *incidental* findings discovered by ultrasound, computerized tomography scan, or magnetic resonance imaging study done for *another reason*. Based upon this, I suggested that he might want to consider an ultrasound, since it is non-invasive, painless, without the need for a needle, contrast, or radiation involved in the other types of diagnostic imaging tests. Richard, however, did not proceed with an imaging study at that time and did not broach the subject again.

Fast forward to a year or so later, late August 2005: For my upcoming 50th birthday, Richard decided to generously treat me to an all-expenses paid gift of an intensive 200-mile bike trip from Canada to Massachusetts that would traverse the entire mountainous state of Vermont, with an overnight stay in a country inn. Richard, myself, and a few other friends had been training rigorously for the 100-mile-per-day effort. Several days before our scheduled departure, Richard telephoned me from the hospital's imaging center, where he had decided to have a computerized tomogram (CAT) of his abdomen, a step up in terms of providing anatomical information from the ultrasound that I had suggested a year earlier. His decision had been somewhat impromptu—he was experiencing NO symptoms of any kind at all.

I was astonished to learn that he had an 8-centimeter mass in his kidney. I told him that it was likely a benign cyst, but he replied that, no, it was a solid mass and he wanted

me to be his surgeon. I was in total shock, I believe almost as much as Richard, as I had initially been the one to suggest an abdominal scan of some sort. However, NEVER had I imagined that something would actually be uncovered. A follow-up magnetic resonance imaging (MRI) scan showed that this mass appeared to be contained within the kidney and that, luckily there was no evidence of disease spread.

We, of course, immediately cancelled the cycling trip and instead arranged for a trip to the operating room. I performed a fortunately uneventful nephrectomy (kidney removal), after which Richard stayed in the hospital for only two days, having an extremely rapid convalescence because he was in such great physical shape on the basis of our extensive cycling. The pathology report confirmed kidney cancer, with no evidence of extension beyond the kidney and the specific kind of cancer that generally was indicative of an excellent prognosis. Believe it or not, Richard was back on the bike one week after his surgery—an incredibly rapid return to activity. Happily, today Richard is fine—his follow-up CAT scan one year later was perfectly normal—and I have every expectation that he will continue to thrive. In fact, he is cycling stronger than ever!

The moral of this story is that there are some really good diagnostic tests out there that can pick up certain disease processes in their early and curative phases, obviously really making a difference. The other moral of the story is that Richard's being in such great physical shape and having such a tremendously positive attitude went a long way in helping him recover so rapidly. So, yet another reason to exercise, eat properly, and maintain a healthy lifestyle is the advantages that accrue when you get sick and you need medical or surgical treatment.

I am not necessarily advocating that everybody get themselves imaged, but from my *inside* vantage point, I see significant merit in doing a non-invasive test (such as

an abdominal and pelvic ultrasound), that has the potential to provide invaluable, possibly life-saving, information. Many of our internal organs can be examined with abdominal/pelvic sonography, including the liver, spleen, kidney, adrenal glands, pancreas, gall bladder and biliary tree, aorta, vena cava, bladder, prostate, uterus, and ovaries. Some pundits will lambast the concept of such imaging, stating that the yield for pathology is small and that it can open a *can of worms* when the study reveals uncertain findings that may mandate further studies and follow-up. My take is that even though the discovery of *significant* pathology is indeed small and that these studies may not prove cost-effective in dollar terms, if it is *you* diagnosed with a treatable illness, then the yield suddenly becomes extremely *high*, in fact, *priceless*! Just a note: shortly after my 50th birthday, I had a CAT scan in addition to my earlier ultrasound—the results were normal thanks to the forces and powers that be!

I am a big fan of technological advances in general, and specifically with respect to medicine. When I was growing up, I was quite fascinated with the compact scanning device that Dr. James McCoy, physician of the Starship Enterprise, employed to provide a rapid diagnostic evaluation of crew members on the science fiction television show *Star Trek*. Well, people, we now have that technology, although it may not be quite as compact as that used by Dr. McCoy! Certainly, it makes sense to take advantage of anything that can contribute to our health, well-being, and longevity.

Being Smart and Not Being Stupid

There is absolutely no sense in maintaining a healthy lifestyle, exercising regularly, and “living clean” if you allow yourself to get into situations where you are likely to meet your premature death by a preventable accident. So don’t take unnecessary risks! Wear a helmet when you cycle,

in-line skate, ski, etc. When I was a child—before wearing helmets was in vogue—I struck a rock while cycling and was thrown off my bike, landing on my head, and found myself in the hospital with a concussion and hairline fracture of the skull. If you are playing golf or swimming and the skies darken and resound with thunder, go running for shelter! Death by lightning is cruel and painful, and largely avoidable. If you are on the fairway and hear the word “fore” screamed, don’t turn around and stare in the direction of the oncoming missile, but cradle your head within your arms and duck down. If you decide to cross the highway on foot, use the pedestrian bridge and do not participate in the game “dodge the cars going 70 mph,” like some imbecile did the other day as I was returning home from work!

Equip your home with carbon monoxide detectors, smoke detectors, and fire extinguishers. If the carbon monoxide detector or smoke detector starts beeping, don’t start reading the instruction manual and try troubleshooting on your own. I once foolishly pulled a beeping carbon monoxide detector out of the outlet, scrutinized the device carefully as if I knew something about it, and then took a second one and plugged it into the same location to see if perhaps it was a device malfunction. Finally, I used my brains and called the fire department, which has the sophisticated equipment to test the situation (fortunately, there was no problem). Don’t consider calling for help a weakness, like asking for directions when you are lost. Death by carbon monoxide is not an unpleasant way to die, but a premature demise is probably not your goal if you are reading this book!

Now, a few words about the automobile, a wonderful invention, but one with the potential of being a motorized sarcophagus: Buckle up when you get in your car. The seat belt law is a good one that *does* function to save lives—you really never do know when you might be involved in

an accident. During 2005, 2.7 million people were injured and 43,000 were killed on United States roads. Drive carefully!! Don't be guilty of DWD—driving while distracted—a prevalent and dangerous situation! Don't play with the radio, reset the clock, enter data into your PDA, text message your friends (DWT—driving while texting—was banned by law in Washington State in May 2007), put in your contact lenses, eat a Big Mac, read the newspaper, do a crossword puzzle, write a grocery list, apply your lipstick, or nurse your baby while driving! Believe me, I am guilty of *all* of the above, save the lipstick, the Big Mac (but I have been known to eat a salad on the road—not such an easy task while driving a car with a manual transmission!), the text messaging, and the breast feeding. Do not open up a large road map and study its intricacies while riding—it is so easy to get lost focusing on the task at hand that you forget that you are moving through space at a very rapid and dangerous pace. I almost met my demise in this fashion while driving to college—on Route 7 in Vermont, I gazed up from the map that I was studying to see that I was in the oncoming lane of traffic milliseconds away from a collision with an 18-wheeler. Fortunately, I was able to veer back into my lane in time. Driving is truly not the time for multi-tasking, as much as many of us, myself included, love to multi-task. The major cause of motor vehicle accidents is on the basis of distraction and inattention to the road. Don't drive when you are fatigued, a cause of death in the U.S. of 1500 people annually, injury of more than 70,000 people annually, and more than 100,000 crashes annually. If you feel your eyelids shutting and your head nodding, get off the road and either take a nap or get yourself a potent source of caffeine. This problem has been somewhat mitigated by rumble strips and raised illuminated dots used to mark lanes and center lines that awaken the somnolent driver in a wandering vehicle by virtue of the thumping noise generated. New technology will likely offer drowsy driver monitoring systems as standard features in

commercial trucks in the next few years (and probably cars within the next decade)—sensors will detect the driver falling asleep and a puff of air on the back of the neck, vibrations of the steering wheel, or a buzzer alarm will awaken the driver in response to the sensors. Finally, NEVER, EVER drive if you are intoxicated. We all overestimate our alertness and abilities after imbibing, and the consequences can be fatal to ourselves or others.

Avoid excessive sun exposure! Some sun is important in terms of allowing us to form Vitamin D. However, only 15 minutes of sun daily on your face and arms during the summer months is sufficient to result in a full year's supply of Vitamin D! There is also the alternative of getting your Vitamin D from foods and supplements. It is ironic that a tan looks healthy while, in fact, it is extremely unhealthy. A tan is basically a condition in which the skin produces the pigment melanin as a defense mechanism to protect itself from ultraviolet radiation. This brown pigment, which we see as an attractive, bronzed healthy glow, is produced only after the skin has sustained damage to its DNA. The truth is that ultraviolet radiation must be thought of as a carcinogen, damaging the skin's DNA and leading to mutations that can cause skin cancer.

The solution to protecting yourself from the hazard of ultraviolet radiation is the generous application of sunscreen and sun-blocking lip balm 15-30 minutes before going outside. Reapply the sunscreen and lip balm every few hours, more often if you are swimming or sweating. Be sure to wear a large-brimmed hat to protect your head and face, and wear sunglasses to protect your eyes. Ultraviolet radiation is actually capable of penetrating your clothes; so, if you are going to be outdoors for extended periods of time, you should know that there are now clothes available with sun-protective fabrics—alternatively, your clothes can be washed in *SunGuard*, a product that will mitigate most of the UV radiation exposure.

Be particularly careful of sun exposure between 10:00 a.m. and 2:00 p.m., the hours when the sun rays hit you from a more direct angle and are thus more damaging. Gone are the days when we sunbathed slathered in baby oil with a reflective mirrored visor to enhance our sun exposure—we didn't know better then! If truth be told, we'd all be best off sitting in the shade! I worship the sun—its light and warmth make me feel joyous and alive—but I certainly know that too much of it is a very bad thing, causing premature aging of the skin, pigmentation changes, and a variety of skin cancers. My father has had what seems like a zillion basal cell cancers carved off his face, chest, shoulders, and back, all due to excessive sun exposure years ago, and I don't ever want to be put in that situation! Seriously, there are more than one million cases of basal cell or squamous cell skin cancers, and more than 60,000 cases of the far more lethal melanoma diagnosed annually in the United States. So be smart—avoid excessive sun exposure, whether real or emitted by a tanning salon! People who have chronic over-exposure to the sun often end up with thickened, damaged, intensely wrinkled skin that is sometimes referred to as “crocodile skin.” So go ahead and worship the sun, but do so with the appropriate armor on—a wide-brimmed hat, good quality sunglasses, a generous application of a broad-spectrum sunscreen, and sun-blocking lip balm. Recently, I have observed more and more people using parasols, more commonly used in Europe and Asia, but offering equal protection from the sun that umbrellas do for rain.

Be wary of airborne pollutant particles such as dust, soot, and smoke—these are small enough to get by our breathing filtration system and become lodged deep within the recesses of the lungs—engendering respiratory problems such as asthma and contributing to cardiovascular problems and premature death. A significant amount of these fine pollutant particles are produced by diesel engine emissions from the exhaust of commercial trucks. The

bottom line is that not all air is of the same quality, and it is prudent not to reside or exercise too near a major highway or other source of industrial pollutants. In terms of air quality and minimizing exposure to airborne pollutants, you are probably better off living in Boise than the Bronx!

Drugs are great when used in the proper circumstances—surgery is so much better for patients these days now that we have modern anesthesia and no longer have to ply patients with whiskey and have four large men hold them down as they squirm, squeal, and writhe in pain as their surgery is performed! *Recreational* drug use, however, is not an intelligent endeavor, unless the recreational drug is harmless to the individual and others—the only drugs in this category that I can think of are Viagra, Levitra, and Cialis! Be sensible with respect to alcohol intake. Immoderate use of alcohol is associated with very serious physical and psychological problems, including damage to the liver and brain, straining of inter-personal relationships, and preventable deaths. Remember, alcohol is a drug that can cause dependence, increasing tolerance, addiction, and severe withdrawal symptoms. Recognize when you might have a problem—when your drinking is interfering with work, school, or home responsibilities; when you drink under dangerous circumstances, such as when driving or operating equipment; when you think about having a drink—or actually do!—from the moment you awake until you go to sleep; when you lose track of hours or days; or when relationships start becoming negatively affected.

Practice SAFE SEX! As I stated in the preface, we won the lottery big time when we were given the gift of life. Unfortunate as it may be, many other species of creatures have also won the gift, and they are not always cute and cuddly domesticated animals that we maintain as pets! Not only do these critters share our world, they often share

our genitals, which they appropriate as a living space, and sometimes spread to the rest of our bodies where they can incur significant harm. There is a zoo on you and in you of naturally-occurring, healthy flora (harmless bacteria and fungi), and our goal is to not allow that zoo to be contaminated by nasty foreign creatures that have the potential for doing harm. There are many, many sexually transmitted diseases (STDs) out there—defined as diseases caused by pathogens (bacteria, viruses, etc.) spread person to person by sexual contact. Although some are merely annoying and are easily treated, others can cause significant morbidity; some are associated with the development of cancer, and others, including HIV, are responsible for an epidemic of death. To name a few: HPV (human papilloma virus, responsible for genital warts), HIV (human immunodeficiency virus), PID (pelvic inflammatory disease), hepatitis, herpes, chlamydia, syphilis, gonorrhea, pediculosis pubis (pubic lice), scabies, lymphogranuloma venereum, granuloma inguinale, chancroid, trichomoniasis, and molluscum contagiosum. If they sound bad, well trust me, they are! Better to avoid contracting these than to acquire them and have to be treated.

So be smart when picking your sex partner. If conceivable, inquire about former STDs and testing status. You may be better off practicing abstinence or masturbating rather than coupling with the village strumpet or lothario! If your boyfriend has warts or open lesions on his penis or your girlfriend has creepy, crawly things populating her vagina, it is a clear cut sign that *tonight is not the night*. Condoms are the only widely available proven method for reducing the risk of transmission of HIV and other STDs, but they are certainly not infallible. It is really not a bad idea to be in a long-term, monogamous relationship!

Bottom line: Practice SAFE and RESPONSIBLE LIFE! This includes practicing safe driving, safe sex, safe eating and

drinking, safe sports, etc. Take only calculated risks. You've got only one life to live and this is it. Why risk it unnecessarily?

My Sentiments on Tobacco...Get Ready!

Smoking cigarettes is *bad*—no, smoking is *terrible*—no, smoking is completely, absolutely, 110% *horrendous* for your health (the same goes for chewing tobacco). I'm sorry to offend anyone (no, actually, not really), but my attitude is that only a *jackass* would smoke cigarettes with the medical knowledge that we have today. Years ago, smoking was an excusable habit simply because we didn't know any better. Smoking was thought of as a sophisticated, glamorous and sexually-alluring endeavor and was so glorified on television, in magazines, and in Hollywood on the silver screen. Magazine advertisements depicted physicians smoking and one slogan was even created stating: "More doctors smoke Camels than any other cigarette." Even my father, a physician, smoked; however, as soon as he caught wind of the fact that smoking was dangerous to his health, he stopped immediately.

Smoking is a vile, malignant, disgusting, incredibly harmful, self-destructive, malodorous, miserable habit and addiction. It is the single greatest cause of illness and premature death in modern society. Every cigarette that you smoke can be thought of as another nail in your coffin. There is *no* good that comes out of this horrific habit. Smokers develop more wrinkles and creases on their face than non-smokers, causing them to appear prematurely old. Smoking stains teeth badly. The rank odor of stale tobacco makes a smoker's breath, body, clothes, home, and car smell absolutely foul. A smoker's sense of smell and taste are blunted. Smoking is downright expensive—the average national retail cost of a single pack of cigarettes is well over \$6.00. You do the math—even if you only smoke 1 pack per day, that's \$42.00 per week...over \$2000

per year! What a waste! Go shopping, go out to dinner, go to Disney...just think of what you could do with that extra money. Additionally, smokers pay much more for life insurance than non-smokers do. Cigarette smoke makes me choke and gag and I absolutely despise it.

The greatest irony is that you'll meet many smokers who have a pervasive fear of such things as terrorism and potentially pandemic bacterial and viral illnesses such as avian bird flu, mad cow disease, SARS, anthrax, West Nile virus, etc. What they fail to realize is that the cocktail of carcinogenic chemicals entering their lungs and bloodstream via their cigarette smoking and being delivered to every single cell in their body can be thought of as *little terrorists—suicide bombers* if you will, that can and certainly will ultimately wreak havoc on their health and their lives. Smoking really is just a form of slow, voluntary suicide. While we do not have a great deal of control over terrorist acts or deadly epidemics, we certainly have the ability to live a smart lifestyle that avoids malignant and self-destructive behavior such as smoking! It is your choice...so choose carefully and wisely. More than anything, choose before it is too late.

A recent article in *The New York Times* described the increasing popularity of hookah (water pipe) cafes among college students. These have been cropping up in Middle Eastern immigrant enclaves. College students share hookahs in which they draw in flavored tobacco bubbled through water pipes in an effort to relax and be sociable. I cannot fathom bright university students polluting their bodies with tobacco in the guise of an exotic, aromatic delivery system! What is it with our society? Will we fall for anything?

What truly is a source of amazement to me are the smoking lounges in the airports. Glassed in like fish in an aquarium, these ridiculous-appearing *homo sapiens* (hard

to believe that homo sapiens means *wise* or *thinking man*!) are puffing away in unison, garnering not only the ill benefits of first-hand smoke, but also second-hand, third-hand, and every other permutation imaginable! A motley group of men and women collectively inhaling and exhaling, hacking and choking within this absurd observatory, with plumes of smoke floating around like nuclear clouds—I feel like I am at a glass menagerie, never ceasing to be astonished at the folly of humankind!

Almost six trillion cigarettes are smoked worldwide on an annual basis! To quote Robert N. Proctor from the op-ed section of *The New York Times*, “that’s enough cigarettes to make a continuous chain from the earth to the sun and back, with enough left over for a few side trips to Mars.” *Polonium 210*, a highly toxic radioactive poison that was brought to the attention of the public because of its use in the November 2006 poisoning of a former KGB agent, is present in tobacco and is inhaled along with the tar, nicotine, cyanide, and other chemicals. So, in addition to the myriad of poisons and toxins in tobacco, you can add the fact that cigarettes are radioactive.

In August 2006, a federal judge named Gladys Kessler ordered strict new limitations on tobacco marketing, sticking it to the cigarette manufacturing companies for their disingenuous behavior and forcing them to stop labeling cigarettes with deceptive descriptors including “low tar,” “light,” or “natural.” The tobacco industry was shown to have “marketed their lethal product with zeal, with deception, with a single-minded focus on their financial success and without regard for the human tragedy or social costs that success exacted.” She further stated that “cigarette makers profit from selling a highly addictive product that causes diseases leading to a staggering number of deaths per year, an immeasurable amount of human suffering and economic loss, and a profound burden on our national health care system.”

Even in France, where cigarettes have always been considered *tres chic*, public smoking has now fallen out of favor, as it is in many locales in Europe. In October 2006, a French parliamentary committee approved a proposal to ban smoking in most public areas (including hospitals, schools, and offices); and, oh la la! effective January 1, 2008, the ban was extended to bars, restaurants, hotels, nightclubs, and cafes! Yes, humankind is evolving, albeit slowly!

Exposure to second-hand smoke, also known as environmental tobacco smoke, is emerging as a *major* cause of adverse health effects, including cancer, coronary artery disease, respiratory infections, and asthma. Second-hand smoke clearly is associated with serious diseases and is responsible for shortening life spans. Second-hand smoke is a mixture of the smoke given off by a cigarette, pipe or cigar and the smoke exhaled into the air we breathe from the lungs of smokers. Second-hand smoke is involuntarily inhaled by non-smokers and can linger in the air for hours after cigarettes have been extinguished.

There is no safe level of second-hand smoke, and even brief exposure can be harmful. Second-hand smoke has been classified by the Environmental Protection Agency as a cause of cancer in human beings, causing approximately 3,000 lung cancer deaths and about 50,000 cardiac deaths in non-smokers in the United States annually. Second-hand smoke is particularly harmful to young children, being responsible for hundreds of thousands of respiratory tract infections in youngsters under 18 months of age. It is also a potentially causative factor in sudden infant death syndrome (SIDS), as well as cited as aggravating symptoms of asthma, allergies, and other pulmonary conditions.

So, what to do? Avoid exposure to second-hand smoke whenever and however possible! Avoid restaurants and bars that allow smoking. Avoid driving in any car where someone has smoked or any home where smokers live. Avoid hotel rooms where smoking is permitted. Avoid casinos. By avoiding such exposure, you may be preventing serious illness or even death. Ireland was the first country to ban smoking at the workplace, followed by Scotland, New Zealand, Australia, Norway, Sweden, Italy, Canada, Uruguay, and France. Eleven U.S. states prohibit smoking at the workplace. There is compelling scientific evidence that smoke-free workplaces result in a rapid improvement of the health of the workers. Irritation of the eyes, nose, and throat as well as coughing, wheezing, and shortness of breath diminish rapidly. Although these trends are encouraging, 50% of the United States population is still exposed to second-hand smoke at work and legislation to mandate a smoke-free workplace will go a long way towards improving respiratory health and helping to prevent chronic diseases.

A chemical dependence on nicotine satisfies the criteria for an *addiction*. Nicotine is a mood-altering drug—a stimulant—leading to compulsive use, in spite of the obvious adverse health consequences. The cigarette user develops *tolerance*, in which increasing levels of nicotine are needed to result in the same effect, as well as *physical dependence*, in which symptoms of withdrawal will occur if the blood levels of nicotine fall. In addition to addictive nicotine, there are a myriad of other chemicals present in the tar component of tobacco smoke, including numerous cancer-causing agents (carcinogens), as well as other poisons.

The WHO (World Health Organization) estimates that by the year 2020, cigarettes will be responsible for the deaths of 10 million people annually. Cigarettes killed 100 million people in the period between 1900 and 2000, and we're

on track for nearly a billion tobacco-related deaths for the 21st century. About half of all smokers will die of smoking-related diseases. Habitual smoking decreases general life expectancy by an average of 8-12 years. And you should know that many smoking-related deaths are not pleasant and quick deaths, but are often protracted and associated with significant suffering. To quote Denis Leary: “Well you know, smoking takes ten years off your life. Well, it’s the 10 worst years, isn’t it folks? It’s the ones at the end. It’s the wheelchair, kidney-dialysis, fucking years. You can have those years. We don’t want ‘em, all right?”.

In case you still have not yet grasped this unfortunate picture, I will attempt to list many of the medical issues that occur as a direct result of smoking:

Malignancies

- ✓ Lung cancer
- ✓ Mouth cancer
- ✓ Nasal cancer
- ✓ Tongue cancer
- ✓ Throat cancer
- ✓ Esophageal cancer
- ✓ Pancreatic cancer
- ✓ Cervical cancer
- ✓ Bladder cancer
- ✓ Kidney cancer

Non-malignant conditions

- ✓ Chronic cough
- ✓ Respiratory infections
- ✓ Emphysema
- ✓ Coronary artery disease
- ✓ Peripheral vascular disease
- ✓ Aneurysms
- ✓ Stroke
- ✓ Sexual dysfunction

- ✓ Osteoporosis
- ✓ Cataracts
- ✓ Macular degeneration
- ✓ Gum disease
- ✓ Tooth loss

As a urologist, I see a great deal of bladder cancer. Bladder cancer is *highly* associated with cigarette smoking—even if one stopped smoking years ago, the risk is related to the *quantity* of cigarettes smoked over the years. The carcinogens that are present in cigarettes are absorbed through the lungs into the bloodstream and are filtered through the kidneys directly into the bladder, where the prolonged contact time with the lining of the bladder can ultimately lead to cancerous changes. Bladder cancer is the fourth most common form of cancer in men and the eighth most common form of cancer in women in the United States. You do not want bladder cancer if you can possibly help it.

In my practice, I also see a great deal of erectile dysfunction. Difficulty obtaining or maintaining an erection is clearly correlated with cigarette smoking. Smoking causes damage to the blood vessels leading to the penis, which results in insufficient blood flow to the penis. No blood flow, no erection. So the romantic notion of smoking a cigarette after sex is actually quite ironic! Smoking can cause female sexual dysfunction as well. The blood vessels leading to the clitoris and vagina become damaged, interfering with sexual function, potentially negatively affecting arousal, lubrication, and orgasm.

So do whatever it takes to stop this horrible addiction. Although quitting will not erase the years of cumulative damage induced by smoking, it will mitigate additional further damage. Quitting this habit is one of the most important things that you can do to improve your health. Smoking cessation will decrease your risk of cancer, heart

disease, stroke, and premature death. If you are pregnant, please be smart. It is common knowledge that smoking by pregnant women is associated with premature birth, low birth weight, and fetal injury, and stopping smoking before or during pregnancy will reduce your risk of infertility or having a low birth-weight baby. Set a good example for your children by not smoking!

Most smokers really do want to stop smoking, but cannot because of the difficulty involved; in fact, many ex-smokers have tried quitting as many as ten times before they are finally able to kick the habit. Fact: ***quitting is difficult, but absolutely possible and doable.*** Quitting smoking demands commitment and motivation. It is advisable to seek help from your doctor to facilitate the process. *Bupropion* and *Varenicline* are FDA-approved medications to aid in the cessation of smoking. Many people have found support groups helpful—these are offered by the American Lung Association and the American Cancer Society. The Center for Disease Control (CDC) has a “stop smoking hotline” (800-QUIT-NOW), which offers free counseling and a personalized smoking-cessation program. Friends and family and a strong social network can also be a good source of emotional support and motivation. You need to expect that you will experience withdrawal symptoms, including: cravings, anxiety, restlessness, and irritability. However, nicotine replacement therapy can ameliorate the withdrawal symptoms. Nicotine without the harmful other chemicals found in cigarettes is formulated in gum, lozenges, patches, inhalers, and nasal sprays. Interestingly, quitters who exercise double their odds of successful quitting. Exercise seems to lessen the withdrawal-induced depression, perhaps via the release of endorphins.

Sleeping

Adequate quantity and quality of sleep is of obvious importance to our well-being and optimal functioning. We have all enjoyed the blissful experience of a great night's sleep, in which we awaken well-rested, energetic, optimistic, and ready to approach the new day with vigor. Conversely, we have all experienced a very poor night's sleep, in which we awaken feeling physically exhausted, mentally spent, lids heavy, dark circles under our eyes, and often in a disassociated “zombie” state, totally unprepared and unenthusiastic about facing the new day. Sleeping has a vitally important restorative function—simply put, our batteries need to be recharged—our brains and bodies require this important down time. During sleep, there is an increased rate of *anabolism* (growth and synthesis), and a decreased rate of *catabolism* (cellular breakdown). The amount of sleep actually needed is biologically determined and is different for each person. Some can make do with five hours of sleep while others require ten hours! As a general rule, seven to eight hours is recommended. For reasons unknown, the aging process is associated with a diminution in our ability to fall asleep and stay asleep.

Good quality sleep is a very important component of health, wellness, and general fitness. Sleep disruption or deprivation results in definite dysfunction, with mental and physical manifestations. Severe sleep deprivation is associated with a disruption in endocrine, metabolic, and immune function. This results in decreased levels of *leptin* (a chemical appetite suppressant), increased *ghrelin* levels (a chemical appetite stimulant), increased *corticosteroids* (stress hormones), and increased *glucose* levels (higher amounts of sugar in the bloodstream). Such acute sleep disruption is associated with augmented appetite, increased caloric intake, irritability, impaired cognitive function, and poor judgment. Chronic sleep deficits result

in an inability to be attentive and focused, interfering with work and school performance and causing increased injuries (such as falls), and motor vehicle accidents. The dissassociated “zombie” state lends itself to dysfunctional eating patterns and, as such, weight gain is a predictable consequence. A chronically-fatigued state also will affect one’s ability to exercise properly, if at all. Chronic sleep issues can result in making one feel generally ill and appearing much older than they are chronologically.

There are a variety of means that can facilitate a good night’s sleep. Leading an active lifestyle with plenty of exercise and stimulation—physical and mental—definitely helps. It also helps to get up at a reasonable hour in the morning, not “sleeping in” until noon as my teenage daughter and college-age son do! On weekends, I don’t sleep a whole lot later than I do during the work week—this is not by design, but just the nature of my own biorhythm. My personal biological clock is very much in tune with sunlight and generally, when the sun rises, I do so in tandem. I often find myself cycling or playing tennis at 7:00 a.m. or earlier on Saturday or Sunday mornings. Although some will find the concept of exercising at this hour or even the idea of arising at this hour on a weekend distasteful, I believe that it is a great way to start your day. If I am not exercising at this early hour, I am reading the paper, a medical journal, or a novel, at a time when everyone else in my household is still in bed. I find that being up while everybody else is sleeping gives me privacy and tranquil personal time, where I can be particularly productive and efficient. A reasonably consistent awakening time lends itself to consistency in getting to sleep, as opposed to weekend “slummers” who have difficulty falling asleep on Sunday evening because of sleeping so late Sunday morning. It is also helpful not to try to stay up to all hours of the night, although this is not always possible or feasible. It usually takes me about 5 seconds to fall asleep. After pushing my mind and my

body all day, the truth is, I'm downright exhausted! Staying asleep can be another issue for me, however, particularly if my sleep is disrupted by a telephone call from the emergency room or a patient.

The following are sensible measures to help ensure a good night's sleep: Maintain a comfortable sleeping environment—that means a good quality supportive bed, comfortable pillows, dark room, cool temperature and, if you like, “white noise” (I find that the monotonous sound of the sea produced by my sound machine, coupled with the gentle whirring of an overhead fan, is an instant relaxer). Avoid, if you can, drinking too many caffeinated beverages—coffee, tea, cola—particularly after 6:00 p.m.; consuming a large meal at dinner or eating very late at night; imbibing too much alcohol; or exercising late in the evening. Finally, of course, try to minimize the stress in your life, as much as conceivable. I find herbal teas, particularly chamomile, very soothing. Engage in a relaxing activity immediately prior to sleep—reading, watching a movie or television show, crossword puzzle, sudoku, sex—whatever tends to reduce your stress and engender sleepiness! So, if you want to feel your best, look your best, and function to the best of your ability, it is imperative that you make every effort to get a good night's rest.

Cancer Prevention

Every five years, the American Cancer Society releases a guideline for cancer prevention. Tobacco, responsible for a third of the more than 500,000 cancer deaths annually, is not listed on the new guidelines because it is on the old guidelines. New guidelines have recently been released. They are as follows:

- Maintaining a healthy weight throughout life by balancing caloric intake with physical activity—at least 30 minutes of moderate to vigorous physical activity above and

beyond normal daily activities on five or more days per week. More prolonged exercising, 45-60 minutes per day, may confer even greater benefits.

- Adopting a physically active lifestyle, since a third of cancer deaths are attributable to bad dietary and physical activity habits.
- Consuming a healthy diet emphasizing plant-based foods.
- Limiting alcohol consumption to no more than one drink daily for women and two drinks daily for men.
- Public, private, and community organizations are encouraged to increase the availability of healthy foods in schools, workplaces, etc.
- Communities are encouraged to provide safe, enjoyable, and accessible places for physical activity.

As you can see, the cancer prevention guidelines promulgated by the American Cancer Society are essentially the equivalent recommendations for maintaining cardiovascular health and for aging well! Bottom line: preventive maintenance today, in terms of diet, physical activity, the avoidance of malignant behaviors, routine medical care, and being smart, can eliminate the need for major repairs later.

Chapter Eight

THE AGING PROCESS:

Time—She Stops For No One

*“All the world’s a stage,
And all the men and women merely players:
They have their exits and their entrances;
And one man in his time plays many parts,
His acts being seven ages. At first the infant,
Mewling and puking in the nurse’s arms.
And then the whining school-boy, with his satchel
And shining morning face, creeping like snail
Unwillingly to school. And then the lover,
Sighing like furnace, with a woeful ballad
Made to his mistress’ eyebrow. Then a soldier,
Full of strange oaths and bearded like the bard,
Jealous in honour, sudden and quick in quarrel,
Seeking the bubble reputation
Even in the cannon’s mouth. And then the justice,
In fair round belly with good capon lined,
With eyes severe and beard of formal cut,
Full of wise saws and modern instances;
And so he plays his part. The sixth age shifts
Into the lean and slipper’d pantaloon,
With spectacles on nose and pouch on side,
His youthful hose, well saved, a world too wide
For his shrunk shank; and his big manly voice,
Turning again toward childish treble, pipes
And whistles in his sound. Last scene of all,
That ends this strange eventful history,
Is second childishness and mere oblivion,
Sans teeth, sans eyes, sans taste, sans everything.”*

William Shakespeare, *As You Like It*

What a vibrant portrait of the aging process and its stages, from infancy to old age, illustrating how life turns full circle! Are our senior years inevitably characterized by a second childhood, oblivion, and the loss of our teeth, vision, sense of taste, and everything meaningful? Is that our fate? Or can our destinies be altered?

The Fleeting Nature of Existence—A Philosophical Digression on the Speed of Time: *Tempus Fugit*

The aging process is insidious. The years creep by, seemingly slowly at first; then, ever so gradually, the *wheel of time* starts to crank faster and faster with greater and greater momentum, until the weeks and months roll past at a dizzying and frightening warp speed. Before you know it, you are 50 years old and are at the summit of the mountain, looking down at the back face or, for you golfers out there, you're on the back nine.

The older you get, the faster the *perception* of the passage of time gets. When I was a child, a single summer seemed to represent an eternity; now, in midlife, the summers blur by at a rate that challenges my sanity. Family events that are initially scheduled on the calendar for a few years from now seem to approach at an uncomfortably rapid pace and, suddenly, are *here*. Part of this may be explained on a strictly mathematical basis—for a five-year-old, one year represents 20% of his or her life, whereas for a 50-year-old, it represents a mere 2%.

Another factor in the perception of time racing faster and faster is our pursuit of a career—being productive and busy does not necessarily lend itself to the awareness of time: *time consciousness*, if you will. We are all ever increasingly focused on our day-to-day activities, too caught up in maintaining our routines to take notice of the hours, weeks, and years speeding by. The *lightness of being* is an additional factor facilitating the perception of

the rapid passage of time—we float around the planet consumed by a variety of roles that we play, always in a hurry, constantly on the move, existing without giving a great deal of thought to *actual* existence—as a result, existence seems to lose its substance, weight, meaning, and time framework. We are so consumed by our numerous mundane daily destinations, working, traveling, living in our oftentimes insular circles, that we are remiss in attending to the real journey, the true process, life in its entirety. It is a Zen precept that life is to be found in the present moment, and not the future. Lack of focus on the *here and now* with too much attention to the *next moment* can be a factor in the perception of time passing at warp speed.

The bottom line is that the future is approaching in a fast and furious fashion and most of us desire to *maximize* our time—one of our most precious commodities—that we spend occupying space on our planet. And we really do have precious little time here—to quote author/columnist Ben Stein paraphrasing Hart Crane: “*our earthly transit is a brief wink between eternity and eternity.*” To further quote Ben Stein, “*Time is overwhelming, omnipotent, and ubiquitous in its power...it may never be conquered or defeated.*”

As my golf instructor-cum-philosopher Hank relates to me, every opportunity we have to swing a golf club at a ball is a unique moment in space and time—a different day, a different course, a different ball, a different lie, a different mood, a different weather forecast—a moment that will happen once and only once and then will be gone forever. So, since you have one and only one chance at making the most of this unique slice (pardon the pun) of eternity, why not give it your all and make it count to the best of your abilities. This concept is useful when extended to life in general—stop for just a second or two to fully understand the notion that our time is truly limited, that

the clock is ticking away relentlessly. So what is one to do in the face of this seemingly harsh reality? The only thing you can do is try to appreciate *every* moment, put your best effort into *every* endeavor, and relish the journey because the inevitable destination for ALL of us is exactly the same. This is essentially an expansion of Tony Horton's "BRING IT" concept (regarding exercise) to life in general.

"Life is a fatal adventure. It can only have one end. So why not make it as far ranging and free as possible."

Alexander Eliot (*author/critic*)

"We are living on borrowed time."

Father Americo Salvi, my patient

Our Mojo is Ageless

"Age isn't how old you are, but how old you feel."

Gabriel Garcia Marquez,

Memories of My Melancholy Whores

Our driving force and passion—*attitude*, if you will, is something that we are born with and generally never changes with the aging process. No joke! I'm, at my essence, just a 50-year-old kid with the same mental attitude, energy, and life force that I have had since childhood. When my eight-year-old daughter inquisitively seeks advice from me, I answer her questions as best I can, but secretly feel like I am party to a grand charade—I am really an imposter—a poseur—a child in a man's body, and at any time my duplicity will be unmasked. I honestly do not feel any different than I did when I was eighteen, even though my photographs appear different (if truth be told, I actually feel better, stronger, more toned and muscular than I did way back then!). The flame of *joie-de-vivre*, or lack thereof, that we are imbued with does not die or change as we age. Too many of us harbor a

misconception that physical aging is associated with aging of mind and attitude. WRONG!! Questioning my own ninety-year-old grandfather, a Russian immigrant who was employed as a Brooklyn “seltzer man,” about this confirmed my already sneaking suspicions about this stability of passion. He conveyed to me that our drive, enthusiasm, and spirit are truly independent of *chronological* age.

“Never abandon the spirited fire of spontaneous, determined inspiration that sparks dreams into majestic conclusions, marvelous deeds, and spectacular endings.”

Bernard Ficarra, M.D.

“You are old when you lose the capacity to dream and be creative.”

Shlomo Raz, M.D.

(Dr. Raz holds the unofficial title of “father of female urology” and is the Director of Female Urology and Pelvic Floor Medicine at UCLA Medical Center. He is my mentor under whose tutelage I undertook fellowship training. At age 70+, he is still going full throttle, having done over 700 major operations in the last year, and is still designing innovative surgical procedures at a furious pace!).

Aging 101

Since much of this book is about aging, some definitions are in order. What exactly is *aging*? Aging can be defined as the process by which physical (anatomical) and functional (physiological) *changes* occur over the passage of *time*. These anatomical and physiological changes result in a progressive decline of our reproductive, metabolic, physical, and cognitive function and, ultimately, survival. The good news is that life expectancy has increased from about 45 years in the early 1900s to about 75/80 for men and women, respectively. That is a very impressive gain

in one century, predicated on improved health care in general, but specifically on better sanitation, hygiene, reduced infant mortality, and the development of vaccines and antibiotics. Jeanne Louise Calment has the distinction of being the oldest person recorded in modern history, having lived to the lovely age of 122 years old. When it comes to wine or cheese, the aging process may be considered a desirable quality—resulting in such positive attributes as mellowness and ripeness. However, when it comes to human beings, the aging process is not always such a welcomed state. The combined ravages of *time*, *gravity*, and *exposure*—to ultraviolet radiation from the sun, temperature and humidity extremes, dust, smoke, soot, automobile and truck exhausts, industrial pollutants responsible for putting toxins into our food chains, pesticides and other environmental chemicals, cigarettes, alcohol, poor food choices, etc.—can be rather unkind to humankind.

The human aging process is associated with significant disabilities in terms of loss of physical and mental capabilities, diseases and, ultimately, death. The process of aging renders us increasingly less fast, strong, and limber than earlier in life. Physical therapists Marilyn Moffat and Carole Lewis, in their book, *Age-Defying Fitness*, contend that there are five “domains of fitness”: *endurance*, *strength*, *flexibility*, *balance*, and *posture*. The aging process will compromise all of these domains until frailty finally sets in. The good news is that an active existence will delay the decline in each of the five domains. *Frailty syndrome* is defined as the constellation of findings that characterize the latter stages of the aging process, including cardiovascular and pulmonary decline, a loss of muscle mass and strength, balance deterioration, loss of elasticity of connective tissues, weight loss, slower locomotion, and a general feeling of depletion, all resulting in limitations to one’s ability to function. Frailty syndrome is likely engendered by a generalized systemic decrease

in blood flow and thus diminished delivery of oxygen and nutrients. This syndrome is present in virtually all centenarians, most nonagenarians, and some octogenarians.

Chronological vs. Physiological Age

Chronological age refers to how old you *actually* are (in years, months, days, etc.); *physiological* age refers to your *functional* age, the age at which your organ systems and other body parts are functioning at—generally corresponding to the age that you physically appear to be. There can be a great disparity between chronological and functional ages, with higher or lower differentials depending on each individual—one can have a chronological age of 40 and a functional age of 30; or alternatively, someone may chronologically be age 40, yet have a functional age of 60. This disparity basically comes down to genetics and lifestyle. A desirable goal is to maintain a functional age that is as young as possible.

The latest rage is “Body Age” assessment, a test offered at many fitness centers and spas. Created by Polar, a manufacturer of heart rate monitors, this determines body fat, strength, aerobic condition, and flexibility, resulting in a “body age” (i.e., physiological age). As an alternative to this gym test, you can go online to the “Real Age” site—www.realage.com—complete a questionnaire, and have your physiological age simply determined by the answers to the questions. I believe that the *body age* assessment, based upon physically measurable parameters, is probably more accurate than the *real age*, based upon simply answering questions. I actually have my doubts about the accuracy and precision of either assessment; however, if they function to help promote exercise, healthy eating, and a healthy lifestyle, then they certainly are of value.

Since our embarkation to adulthood is initiated with puberty, then essentially our aging process as adults begins at the achievement of puberty. Delayed physical maturity can be a factor in having a physiological age less than one's chronological age—a *late bloomer's reward* so to speak—just as early physical maturity can cause one's physiological age to be greater than one's chronological age.

My genetics were responsible for rather late puberty among myself and my siblings. I didn't reach puberty until I was nearly 16 years old and I still barely needed to shave by the time I was a freshman in college! It was somewhat difficult and traumatic becoming a teenager while standing only 4 feet 10 inches in height (at the time of my bar mitzvah when I was thirteen), when many of my friends were much taller, muscular, and already physically developed. Not great for one's self-confidence when it came to relating to my peers let alone the opposite sex; adolescence is typically a time that is difficult and trying enough without compiling on any additional issues!

Okay, so I achieved physical maturity late in the game and was somewhat stigmatized by the experience, but hey, I eventually caught up. As Nietzsche stated, "what doesn't kill you makes you stronger." The silver lining in this gray cloud was that, not only did I look very young for my age, I was, in fact, younger functionally than my chronological age. It was a good start in the "looking youthful" department, even though I did not realize it nor appreciate it at the time. I had actually been given the gift of delayed maturation, which essentially delayed the onset of the aging process.

The Aging Process

*"Beauty is superficial and fleeting,
but health is profound and lasting."*

Ray Kybartas

As humans age, they undergo numerous physical and functional changes, from the cellular level to the organ level to the organism level. Although the physical and functional changes occurring with aging affect every cell and system in the core of the body, the most obvious signs of aging are external, involving our skin, hair, and nails as well as our posture, carriage, and gait. Our skin loses elasticity and suppleness and becomes thinner, saggy, and wrinkled, particularly manifested in our creased and jowled faces. Due to deposits of melanin, areas of pigmentation occur. Our hair gradually becomes gray and often there is significant balding. Our nails thicken. Corrective glasses are often needed to maintain our visual acuity. Our posture tends to slump, we become fatter, and we move more slowly. Ultimately, we lose our youthful appearance and we look, on visual inspection, old...or at least *older*.

When we *size up* another human being and try to determine their age, how do we really do it? Every Sunday, I like to play a little game with Isabelle. We look at the “Styles” section of *The New York Times*, specifically the photographs of the brides and grooms. We cover up the text under the photos and have a contest: who can come closer to guessing the correct ages of those getting married. We greatly enjoy this competition and usually I score only marginally better than my daughter. In general, when it comes to estimating someone’s age, most humans take a gander and in a matter of seconds can integrate the physical appearance of that person with the data in our brain’s hard drive and come up with a number, usually on a *Gestalt* basis. But let us, for a moment, be a little less Gestalt and more analytical. Let us examine the individual parts that make up the whole image.

A careful observation of our faces, hair, hands, bodies, posture, and gait will allow us to understand the external manifestations of and external physical changes inherent in the aging process. The *face* will give us some of the best

information about age—supple vs. wrinkled, elastic vs. saggy, sculpted vs. jowled. The six inch by two inch rectangle that encompasses our eyes, eyelids, and eyebrows is the most telling twelve square inches of flesh on our bodies when it comes to insight (pardon the pun!) regarding our age.

The *hair* provides important clues as well—receding, thinning, balding, graying, dull vs. full, luxuriant, colorful, vibrant. The appearance of our *hands* can often be as revealing as the face as an aid to determining age—spindly fingers with swollen joints, muscle-wasting, and wrinkled skin with pigmented spots vs. well-toned, unblemished hands with supple skin and symmetrical fingers. Examining the *body* can certainly offer clues for determining age (obviously this is most helpful when viewing the naked body with our *skin* completely exposed); this can be very telling in revealing the effects of gravity, time, and exposure. A roly-poly appearance usually adds years to the image, although, on the flip side, the facial fullness associated with being overweight can cause telling wrinkles and creases to appear less prominent. Dressing sharply and fashionably can certainly belie one's real chronological age, in a similar way that impeccable grooming can. Of course, frumpy dressing and clothes reeking of mothballs can create the impression of being older than our actual age. Other key factors include *posture* and *carriage*—slumped vs. tall and erect—as well as *gait* and *movement*—faster paced vs. slower paced, sprightly vs. shuffling. One's *activities*, *behavior*, and *speech* patterns can also supply us with invaluable information regarding chronological age, as each of these is associated with certain age-specific characteristics and expectations.

So what is it that *actually* makes us appear older? It seems clear that it is a compilation of factors: The largest organ of our body is our skin and this often provides the most

telling evidence of what occurs as we grow older. Our youthful, supple skin that is tautly sculpted over our mandibles and other facial bones—like an artist’s canvas properly stretched over a wood frame—gradually becomes lax and saggy, causing us to develop jowls and sometimes creating the appearance of having multiple chins. There is a *general* loss of skin tone and suppleness *everywhere* on our bodies—although it is particularly evident under our eyes, jaws, the neck area, the triceps area of the upper arms, and our abdomens. Aging skin develops *wrinkles, creases, furrows, and folds*. Fine wrinkles are caused by thickening of the dermal layer of the skin and decreased water within the epidermal layer, particularly evident because of environmental factors that may include cigarette smoking and overexposure to the sun. Furrows are deeper lines that initially appear only with activity of the facial muscles (such as smiling, raising the eyebrows, or concentrating), but eventually appear even at rest as the skin accumulates a “memory.” “Crows feet” form around the eyes, “worry lines” form on the forehead, and “frown lines” between the eyebrows. “Naso-labial folds” appear on the sides of the mouth in the area between the nose and the lips. Our skin also begins to wrinkle and crease over time due to gravity, a reduction of the fatty tissue under the skin, and a loss of collagen and elastin in the dermal layer that causes loss of elasticity and suppleness. Such signs of aging are affected strongly by genetic factors.

The eyebrows may droop over the eyelids and the upper and lower eyelids may sag and become baggy in appearance. The saggy and wrinkled skin can eventually cause our faces to have somewhat of a *prune-like* appearance, as compared to the supple, *plum-like* appearance of youth. Pigmentation changes, including *melasma* (pigmented spots in heavily sun-exposed areas) and *vitaligo* (loss of melanin pigmentation resulting in areas with lighter spots), commonly occur with the aging process.

Aging is generally marked by the process of *recession*—like the beaches pounded by the power of the surf that may erode the coastal sands, our hair lines, gums, and chins also recede. Additionally, our hair often thins or balds, and the richly-colored, luxuriant locks of youth are often replaced by gray, brittle, dry strands. Paradoxically, not only does hair disappear from where we'd like it to remain, but it can start appearing where we don't want it—bristly hairs emerging from the nose, ears, and eyebrows of men, and the chins and upper lips of women—we may start looking like a chia pet if we don't pay attention to careful grooming! Our noses, ears, and other facial features can become enlarged, continuing to grow long after other anatomical parts have shrunk (with the exception of our prostate glands, which enlarge with the aging process), changing our appearance from the “cuteness” of youth to a certain level of “homeliness” in our elder years. Dental changes also clearly parallel the aging process—the beautiful ivory-colored, serrated teeth of youth gradually wear down and stain to a yellowish hue; likewise, increasing dental fragility requires more dental care, such as the need for crowns, bridges, etc. The term for aging—“long in the tooth”—refers to the apparent visual increase in the size of the teeth as age-related gum recession occurs.

The internal core changes that are not externally visible will typically mirror the external changes and manifestations of aging. *Diminished blood flow* is a cardinal finding associated with the aging process. This results from a number of factors, including cardiac muscle atrophy, dysfunction of the heart valves, and loss of elasticity and accumulation of fatty deposits within the walls of the peripheral blood vessels. This diminution in blood flow to our organs will negatively affect the function of all of our systems, since every cell in our body is *dependent* upon the vascular system for delivery of oxygen and nutrients and removal of metabolic waste products.

There is a decrease in the maximal heart rate after age 25 or so (loss of about one beat per year), an increase in blood pressure, a decrease in stroke volume (the amount of blood pumped with each beat), and a decrease in cardiac output (the product of heart rate and stroke volume—how much blood the heart can pump in one minute), of about 5-10% per decade. Our blood vessels become stiffer and less elastic with aging. Our airways and lungs also lose elasticity and become stiffer, making it more difficult to breathe. These cardiac, vascular, and pulmonary changes diminish our ability to perform aerobic exercise as we grow older. This is the major reason why the ages of professional athletes typically span the late teens to the thirties, with rare exceptions. However, it is noteworthy that continued aerobic exercise can impressively *slow* down the aging process of the cardiovascular-pulmonary system.

Muscle mass peaks between ages 20-30, after which there is a loss of 3-5% per decade. Aging causes a decrease in the number and size of the muscle fibers—muscle atrophy causes loss of muscle tone, bulk, and strength. This is another good reason why we do not see many professional athletes above the age of forty. These changes can be mitigated by strength-training exercises performed on a regular basis. Other connective tissue elements, including ligaments and tendons, become stiffer and tighter with aging and, as such, minor aches and pains due to exercise can take longer to normalize as we age.

Bone mass typically peaks at age 30, after which there is a gradual and steady loss in bone density. A sedentary lifestyle accelerates the loss of bone mineral density. Bone anatomy is highly dynamic, with our bones constantly being remodeled. Cells called *osteoblasts* construct new bone, while *osteoclasts* destruct bone: the predominance of one of these two opposing cells will determine whether bone stability, growth, or loss occurs. Resistance to the force of gravity (weight bearing) is an important factor in

the bone mineralization process. The consequence of loss of bone mineral density is “old bones,” which are inherently brittle and have a greater susceptibility to trauma and injury. Spinal cord-injured patients who are paralyzed (and therefore cannot walk and resist gravity by weight bearing), suffer from demineralization. Profound demineralization of bone can be seen in astronauts who participate in space travel at zero gravity. Importantly, working out against gravity (weight and resistance training), helps mineralize bones, which will slow down the inevitable decline in bone density associated with aging.

Accompanying the aging process is a loss of inter-vertebral distance (the distance between the vertebrae), which is due to disc degeneration. Over time, this results in a loss of height—this is why aging adults are physically shorter in stature as compared to what they were in their youth. Our shoulders become more rounded and our posture becomes more hunched, correlating with bone mineral loss, loss of inter-vertebral distance, and degenerative joint occurrences. Arthritic changes with cartilage and joint degeneration can result in pain, deformity and impaired mobility. Ultimately, our gait becomes altered, our pace slows, and our ability for sudden, rapid movements diminishes.

A variety of changes in our metabolism and metabolic processes occur as we grow older, such that our caloric requirements gradually diminish. Starting in midlife, a typical several pound per year weight gain occurs, and body fat percentage often doubles from age 20 to age 50. This insidious addition of even a few pounds per year can result in obesity in a matter of only a few decades. As a result of metabolic changes and weight gain that often accompany aging, serum levels of glucose and LDL cholesterol rise. Women have a tendency to put on the weight subcutaneously (literally meaning “under the skin”),

involving the waist, hips, and buttocks, while men tend to gain fat deeply internally, often manifesting as a big paunch with an apple shape to their bodies.

As we age, brain atrophy and the reduced efficiency of sensory and motor nerve conduction and transmission negatively affect our cognition, memory, reflexes, senses, coordination, and balance. We experience a general decline in the acuity of all of our senses: vision, hearing, smell, taste, and touch. There is a tendency for the lens of the eye to opacify (cataracts), for an increase in intra-ocular pressure (glaucoma), and for the development of macular degeneration, a common cause of age-related blindness. The typical age for difficulty focusing on printed material (presbyopia), which prompts the need for reading glasses, is in the early 40s. Our hearing generally becomes less acute, often requiring the use of a hearing aid. The decline in our ability to taste as we grow older makes eating less enjoyable. There is an age-related decline in our olfactory (sense of smell) abilities as well. Additionally, our skin becomes somewhat less sensitive to touch as we undergo the aging process. We lose balance, agility, and coordination—this combination can make driving and other complex tasks difficult. As we age, we also tend to become increasingly forgetful.

The aging intestinal tract is subject to decreased motility (movement), which can cause bowel difficulties, increased incidence of diverticular disease, and a greater likelihood of gastro-esophageal reflux. Our aging genito-urinary tract results in a decrease in kidney blood flow, concentrating ability, and the number of glomeruli (the functional filtering units of the kidneys). This decline in kidney function usually does not cause any major problems unless it is severe. Both males and females experience an increased incidence of overactive bladder, manifested by more urgent and frequent daytime and nighttime urination and, at times, urinary incontinence. Women develop breast and

vaginal atrophy and men develop prostate enlargement, often turning the simple task of urinating into a struggle. The aging male will often experience sagging of the scrotal sac, a diminished ability to obtain and maintain an erection, and a decrease in ejaculatory volume, force, and trajectory.

And so it would seem that the *golden years* may not really be so golden after all. Many of my patients have pointed out that our golden years are actually our *rusty* years, some have said that they are, in fact, *tarnished*, although a number of my patients have unequivocally challenged this concept. As George Bernard Shaw stated, “youth is wasted on the young.” Many of those that I see in the office have indeed lamented to me what a dream come true it would be if only they were able to transplant their life experience and financial security to themselves at a younger age. One of my Jewish patients related that the proper term for the medical complaints of an aging male or female is *alter cockeritis*! (For those of you out there who are unfamiliar with Yiddish expressions, an *alter cocker* is defined as an old person who complains a lot.)

Ah, but every cloud has a silver lining, and silver hair can have a silver lining as well! The golden years *can* shine brightly, and not all youth is necessarily wasted on the young—the key is to find your own unique means towards the path of aging well—for it is *never* too late to start the journey in search of your own fountain of youth!

Chapter Nine

YOUNG FOREVER—FOREVER YOUNG

EP: age 84

I am a retired jeweler and hotel owner. I am married to a much younger woman and have two stepchildren and two grandchildren. I grew up in New Milford, New Jersey. My father died at age 56 of cardiac causes and my mother at age 84 of cancer. They were from Armenia/Russia and faced much heartache, including the genocide of the Armenians in 1915. They left their families and came to the United States and raised eight children, of which I am the third eldest. Two have passed, one to an accident and a second to cancer. My eldest brother is 90 and is very active, alert, and is in good health. I have an 82-year-old brother with Parkinson's disease, and my only sister is 75 and was recently diagnosed with breast cancer. I am fortunate to have my teeth and hearing. I play 18 holes of golf weekly and practice in between. I usually walk the course. My wife also plays golf and we have a golf group we travel with to California, Arizona, Puerto Rico and Florida. We belong to a country club and go to the many social functions and dinners; also, I like to play backgammon and gin rummy. A good joke, lots of laughs and the horse races are good for the soul. Of course, everything isn't always 'roses'—so you deal with it. Get the best advice and care and you're as good as new. Say your prayers nightly and make peace with all the difficulties that are thrown your way. As a young man at age 18, I became responsible for my father's business, as he was very ill and could not work. At 20, 'Uncle Sam' invited me to go to Italy, Germany and France for three years. I saw the battle of Cassino, battle of Anzio and made the invasion of Southern France, as well

as helped to relieve the Battle of the Bulge. Then, home to support my mother and family. We were a large family and got larger as the years went by—22 nieces and nephews, their spouses and children—always large dinners, weddings, funerals.

I try to maintain regularity when it comes to food and sleep. I eat everything—but not large portions. I do not smoke. I enjoy wine and scotch and vodka on occasion. I have developed glaucoma in the last five years, but other than that nothing. I take a multivitamin and walk, although a little slower lately. I have to keep up with my young wife! I love to see the nieces and nephews and hear of college and their lives as well as watch the new grandson. I try to read and keep current and keep in touch with old friends (they are getting fewer and fewer). My wife and I go antiquing and go on photo shoots (she's the photographer). I like to putter around our Florida home, work in the garden and swim daily in the pool. I go to the hotel office once weekly and make sure everything is okay.

My 'tricks' are 'keep it light'—and 'keep it moving'—a 'tumble in the sheets' works wonders, as does Armenian home cooking!

"To ensure good health in later years, we must prepare ourselves by following such common-sense steps as maintaining a healthy diet, exercising regularly, seeing a health care provider who is knowledgeable about healthy aging, and keeping our minds active."

Bill Clinton (World Health Day—April 7, 1999)

The Youthful Elderly Reveal Their Secrets

As a urologist, I deal with a wide range of patients, since urological problems can afflict either gender, from the very young to the very old. Since these kinds of problems

tend to become more prevalent with the aging process, I do see a sizeable number of older patients on a regular basis for their care.

A subset of my patient population is what I refer to as the ‘thriving elderly’—those who range from 75-100 years old chronologically yet clearly look and function at a much younger age. At the time of their office visits, I posed the following question to them: *“You look and act so much younger than you actually are—can you reveal some of your secrets to a long and healthy life?”* The following is a composite of their answers and nuggets of sage advice. The answers of this group of patients are represented by the bulleted responses, as transcribed by me. While each bullet represents a different patient, what becomes quickly evident is that numerous common thematic elements seem to run through their responses:

- *“If you don’t keep moving and flexing your muscles, there is a tendency towards ‘erosion and corrosion’ of our bodies”; “I am motivated to do everything possible to remain healthy because I do not want to get sick, and I do not want to suffer”; “I feel good when I work out as compared to if I do not work out—if I miss a few days, I feel lousy; I exercise four to five times a week—I spend 30 minutes on the treadmill, 45 minutes doing weights, and finish with a ten lap swim”; “I eat well—before my morning workout I have orange juice and a multi-vitamin. After my workout I have a breakfast starting with a mixture of fresh fruit including blueberries, strawberries, bananas and some cheerios; while I am eating this I simmer a mixture of oatmeal, cream of wheat, and mix in some raisins—this I have with coffee. I have a piece of fruit for lunch, maybe an apple, pear, plum or grapes; for dinner I have poultry or fish, occasionally a steak and a nice salad”; “I heed my doctors’ advice very carefully and take my medications and baby aspirin daily”; “I keep busy studying investments and the financial markets”; “Stress and aggravation are the worst—I stay away from them”*

- *“I have been checked by doctors throughout my adult life because my wife has made me—I’ve seen them all”; “I’m lucky and I’m active”; “I do lots of walking and play nine hole of golf a few times a week”; “I use the bicycle when I’m in Florida”; “I’m a lawyer and even though I’m 87 I still go into the office two or three times a week and work for a few hours, generally handling leases—the ‘boys’ indulge me when I make a suggestion!”; “I read The New York Times cover to cover every day of the week”; “I play cards almost every afternoon—it forces me to think”*
- *“Oatmeal for breakfast with fresh blueberries or strawberries”; “Peanut butter, tomato, or hard-boiled egg sandwich on whole wheat for lunch”; “Fat-free milk”, “Chicken with fresh steamed spinach or carrots for dinner”; “Minimal desserts, perhaps a graham cracker or apple sauce”; “I work 37.5 hours a week”; “I build radio-controlled model airplanes”; “I read the paper daily, watch PBS television, read books in the park while listening to music”*
- *“I am 81 years old and do a daily regimen of Canadian Air Force exercises for ten minutes each morning—I started this in 1964”; “I have a light breakfast and lunch and a healthy dinner; I usually have a gin and tonic around 5p.m. each day”; “I nap (involuntarily) for about 20 minutes each day”; “I try to dress with up-to-date clothing and to avoid looking old-fashioned, frumpy or dowdy, I try to emulate Beau Brummell!”; “I try to get out every day—shop for home, food, clothes, books”; “I am very amiable, friendly, and outgoing—I talk to everyone; I travel about six times a year (ALONE)—but always make good friends. I am lucky and have discovered that many of the people I meet seem to seek me out for future meetings. Like my Mom and Dad, I welcome people of all faiths to my home”; “I keep up body maintenance—I have periodical check ups with all my doctors for ALL body parts!”; “I still teach one college class each Fall semester at St. Peter’s College—this keeps me alert with the younger generation”; “I just moved to a new apartment building in Fort Lee—a great complex with lots of people for sociability and companionship”; “Viva Viagra!!—need I say more?”*
- *“I am not aging well—I am living well!”; “I am still working*

full-time as a rabbi at age 83”; “I abide by the German expression: Man ist was man isst (You are what you eat)”;
“Americans consume the most food but are the poorest nourished, but I eat organic, healthy foods”

- *“I avoid aggravation”; “A good wife and family—close relationships—loving children”; “A few good friends”; “I never overeat; I have a maximum of four ounces of meat for dinner”; “I walk for one hour at least four times weekly, outside in nice weather, at the mall in winter”*

- *“I have good genes—my older brother is 92”; “I work four days per week”; “I work out on the treadmill and with weights three to four times per week”; “I play golf twice per week”; “I exercise portion control”; “I have salad for lunch”; “I read The New York Times every day”; “I color my hair to cover the gray”*

- *“I work 12 plus hours a day, six days per week, even though I am 86 years old”; “I eat vegetable sandwiches for lunch—usually broccoli or spinach”; “I make sure I get a good night’s sleep”; “I drink non-alcoholic beer”; “I never abused myself with cigarettes or alcohol”; “I have a sister who is 94 and a brother who is 90”; “I love to read science and history”*

- *“I work three days a week in a bakery”; “I never smoked or drank”; “I take lots of vitamins”; “I do women’s circuit training for one hour three times a week and belly dancing once a week”*

- *“I’m very aggressive in seeking the action and tumult of working with young people”; “I like the challenges of work—I still work in a full-time capacity even though I retired from my formal occupation at age 65”; “I quit smoking when I was 38 in order to have ‘leverage’ over my son and daughter”; “My breakfast consists of two egg whites on whole wheat toast. My lunch is a green salad with chicken on top. My dinner is seafood. I eat beef only a few times a year. I love fruit and vegetables”; “I exercise five times a week, including racquetball, tennis, spin class, and weight training for my upper body”*

- *“My main secret is that I exercise as much as I can—I go*

to the spa two or three times a week, where I do one hour on the stationary bike and one hour of stretching and flexibility training”; “I work 5-6 hours twice per week in a golf store and I never stand still—I walk all over and ‘kibbitz’ with the other salesmen—I am always active”; “I don’t smoke and I drink in moderation—I tried smoking once when I was thirteen, but my father smacked me from left to right”; “I have been happily married for 62 years”

- *“I don’t worry because life is too short and whatever happens happens”; “I eat healthy—lots of grains, cereals and vegetables, especially spinach”; “I walk up a steep incline on the treadmill, seven days a week”*

- *“I am 90 years old and I stay active every day”; “I do lap swimming twice every week and walk every day”; “I eat only small volumes”; “I attend lectures to keep my mind stimulated”; “The New York Times is my ‘Bible’ and I read it cover to cover every day”; “I am lucky to some extent—I am an atheist”*

- *“I picked my parents well!”; “I exercise seven days a week—weights, stretch bands, stretching exercises and walk for 30 minutes”; “I watch the fats in my diet and weigh myself every single morning—if I gain half a pound, I am ‘careful’ for the rest of the day”; “I was smart to stop smoking when I was 35 and I’m 87 now”; “I keep my brain stimulated with duplicate bridge and stock market research”; “I’m a certified public accountant and am officially retired, but I still work doing trusts, accounting for my family, partnerships, etc.”*

- *“I did hard work for many years—exhausting work pulling concrete for 12-14 hours a day”; “I have always had a good outlook on life”; “I stopped smoking as soon as I found out that it was harmful”; “I have always eaten very well—typically a Mediterranean diet with lots of olive oil, although I do enjoy my pasta”; “I don’t like to work out in a gym, but love to dance and do so 3-4 hours at a time, three times weekly”; “I had a good marriage for 57 years”; “I am 90 now and had a penile implant when I was 85 and I have been very active!”; “My father lived to 96 and my mother to*

90”; *“I do lots of reading—The Wall Street Journal, four or five medical newsletters, etc.; ‘I have been the treasurer of my Elks lodge for 24 years’”*

● These wise words were from a 91-year-old woman whom I was asked to consult on while she was in the Cardiac Surgery Intensive Care Unit recuperating from a valve replacement. She was told that without surgery, she would have at best one to two years to live: *“I have friends who are much younger than I am—I can hardly remember a time when I had a friend my own age”; “I live in my own house by myself and I don’t sit around crocheting and knitting—I do housework, cooking, and spend lots of time with my daughter”; I want to live many more years!”*

● *“I enjoy life to the fullest”; “I try to maintain my proper weight. I eat well-balanced meals without overdoing it in terms of eating or drinking”; “I have been swimming three times weekly, and have been doing so for 21 years”; “I visit my doctors on a regular basis and follow their instructions”; “I am very active and try to think young and keep my mind active and sharp”; “I always have a positive attitude”; “I enjoy being with friends and having a good time”*

● *“I am physically active and keep fit by lifting weights (10 lbs.), walking most days, (25 minutes), and exercise at rehabilitation because of bypass surgery three years ago. I go there once weekly (bike 15 minutes, treadmill 15 minutes, arm machine 5 minutes, rowing machine 5 minutes). I also attend the Jewish Community Center, where I play table tennis for one hour and use the exercise machines and swim twice weekly. I cut my own lawn, blow leaves and garden”; “I keep a low-salt and low-fat diet”; “I enjoy my home and like reading and watching television. I like socializing with younger folks, which I believe helps keep me physically and mentally youthful”; “My hobbies are following Wall Street, playing with my dog and grandchildren, and going to garage sales”; “I deliver ‘Meals on Wheels’, which gives me a good feeling”*

● *“My diet is fish, some meat, and vegetables—salad and a minimum of desserts. I have one drink of spirits a day or*

alternatively, a glass of wine. I go to a good restaurant on Saturday evenings for dinner”; “In 1962 I started to work with a physical trainer in my home basement which I equipped with a treadmill, weights, and a bench. My trainer became unavailable in 1996, but I have basically continued the regimen he created, and do so five days a week. In warm weather, I play golf twice a week”; “I see my cardiologist and urologist semi-annually. I see my dentist and dental hygienist every 60 days”; “My secrets are moderation, exercise, continued activity in my business, and a happy family life”

● *“I was born on a farm in Estonia and am lucky to have parents with good genes”; “As a child I lived a very simple life, eating only natural foods—meat, potatoes, milk, butter, rye bread, etc. I eat almost everything and have never been on a diet”; “My mental attitude is healthy and I don’t allow anything to bother me much”; “I exercise in moderation—weight lifting, walking and floor exercises”; “I drink alcohol in moderation, quit smoking in 1957, and try to get enough sleep”; “After my wife’s death in 1984, I have dated two women. I am 83 and my fiancée and I enjoy life to the fullest. We are very active socially and physically”*

● *“My diet, which is managed and overseen by my wife, has a minimum of red meat and consists mostly of chicken and fish. Broccoli and green vegetables are always eaten in abundance. We drink very little in the way of alcoholic beverages. We might have a glass of wine once a month or so”; “Our lifestyle is active—we often go to the theater, play bridge, enjoy reading and participating in book clubs”; “I exercise 3 or 4 times a week on a recumbent bicycle at home and take frequent walks with my wife. I enjoy golf, and my wife still plays tennis”; “The most important ‘trick of the trade,’ which I can offer is to be fortunate enough to marry a wonderful, loving, caring wife. There is no question in my mind that that has been a primary attribute of my long and healthy life”*

● *“During my youth, we never had ‘junk food’. I still never go near it. I’m not a big eater—I only eat when I am hungry”; “After retiring from work, I joined the volunteer staff in my*

local hospital as a maintenance man. I have been there for 20 years repairing all broken beds”; “Although I am 82, I have never grown old—I don’t even think of my age—it’s only a number. I have never stopped working. I stay away from all senior citizen centers and developments—they are for old people”; “Above all, I have a great sense of humor. I look for the funny side of all situations”; “I have also had a dog for most of my life—I have a small Maltese now—he keeps me active with plenty of walks”

- “Unless I have court matters, I am in my office daily. I try to go to the gym daily prior to going to my office. Weather permitting, I play golf as often as possible”; “I believe that continuing my work schedule and daily gym is conducive to my positive physical condition and mental attitude”; “You are as old as you feel or want to be!”

- “I rarely eat red meats. I enjoy eating health foods and I probably consume twice the amount of salad than most people do. I have an aversion to fat, and seldom eat cake, cookies, or candy. I usually have fruit for dessert and I rarely eat between meals”; “I have always had an abundance of energy and a long stint of physical activity does not tire me”; “I exercise three times a week for about 45 minutes. I have also had a lifetime love of folk dancing and I still attend weekly folk dance sessions”; “My wife and I have a lifelong love of theatre, opera, and dance. We attend one of these functions at least every other week and have done so throughout most of our marriage. I enjoy singing and I have participated in glee club and choir singing for over 30 years”

- “Although I am 76.5 years old, I still go to work several days a week. I also teach Italian to eighth graders at an Academy in Paramus, NJ. I am also a songwriter. I have my song, ‘Reach for the Stars’ in the NASA Space Center, and ‘Lady on the Hudson’ is in the Ellis Island library. I also sing on weekends, either with a Big 17 piece swing orchestra or with a DJ playing my CD arrangements. I do a lot of singing for veteran and senior groups. I have future plans to sing for the Hollywood Actors home in Englewood,

New Jersey”; “I enjoy every minute of my life”; “I like to think of myself as active. My fifth grade teacher said to always keep your mind and body active. This is the key...ACTIVITY. Many of my peers who retired became either infirm or dead within a year. It is like the brand new Lincoln Continental you lock up in the garage. In a short time, the battery is dead, the motor doesn’t work and the tires are flat”

- *“Although I am 87, deep inside, I feel like I am fifty years old, and do things I shouldn’t do. My wife constantly reminds me to rest for a while and take it easy. But, stubborn me, I think positive and continue working. I cut the grass; I do whatever I want to do; I do everything; I keep active—I am never idle, I never sit on my backside doing nothing for more than ten minutes per day. I think young”; “I never smoked cigarettes or drank alcohol during my working years but now I do drink a glass of wine with dinner”; “I take insults as compliments from the ignorant”; “I think positive for today and for every day”*

- *“My secret to longevity is not being bored, but to keep very busy doing the things that I enjoy. My greatest wealth is to live content with little, for there is no want when the mind is satisfied”; “I was always active in swimming, bike riding, skiing and working hard. At age 80, that is why exercise means so much to me now. It keeps the body and mind in true balance. I have a couple of lady friends for enjoyment, dinner, and dancing on Saturday evenings, etc.”; “My diet consists of wild fish, sardines, salads with plenty of raw garlic, chicken, pasta, etc. I eat no red meat and do indulge in red wine. Vitamins and supplements have helped to keep my body supplied with support that I don’t get from everyday food”; “I work part time as a cabinet maker doing all the special jobs in a small shop. It provides very little money but it helps keep my mind alert, active, and sharp”; “I take pride in how I look every day—I am clean shaven, well-groomed, and well-dressed for work or play”; “You have to like yourself and who you are, then other people, in turn, will like you”*

- *“I have been physically active all of my 88 years. Prior to the war, I fought as an amateur boxer, played baseball on a semi-pro level, and played ball as well on three army teams before going overseas. Post war I’ve kept up my physical activities—working out at the ‘Y’ gym and swimming 30 minutes of hard laps daily”; “Equally important is my lifestyle. I used the Pritikin fat-free diet as a guide and have lived that diet for at least 35 years. I am convinced that avoiding fats in my diet has contributed a great deal to my general health”; “I am an avid reader—most interested in national and world affairs. I also work The New York Times crossword puzzle every day which is a challenge, but I manage to complete them”; “My social life these days is limited because most of my friends are gone or have moved to other areas. I think a very big part of a long and healthy life is a good marriage and a wife such as mine with a great sense of humor”*

- *“I am 78 and have had colon cancer for 14 years, with 5 surgeries, 1 round of radiation and 3 of chemotherapy. I have chosen my doctors carefully, do what they tell me, and don’t try to read everything about my medical condition”; “My wife has been very supportive, a good care giver, but doesn’t coddle me. I have trained myself not to get aggravated over non health-related stress. My concerns are for my family happiness and their health, as well as my own. I maintain friendships with people I have known since childhood as well as good friends from my adult years. We have a small family who we see fairly regularly”; “I keep up to date professionally, but no longer practice. I love traveling and continue to do so when I can”; “I go to exercise class one day a week and play tennis for two hours per week. During our 6 week stay in Florida yearly, I play doubles tennis four times a week, and walk daily”; “I read a lot, do crossword puzzles, and have an interest in classical music and opera”*

- *“I was born in Germany and escaped from a French concentration camp”; “I have been divorced for 30 years and although I am 79, I have had a steady girlfriend who is*

30 years old. I like to surround myself with young people and am sexually very active. In other words, I like to have fun and give myself a lot of pleasure and I don't really care what people have to say about my lifestyle"; "I do not smoke or drink and never took recreational drugs. I like to go for long walks. I try to eat healthy and stay away from fatty foods"; "As we all know, boredom is the biggest malaise of mankind, so try to keep your mind and body as occupied as often as possible. I love to play bridge and to travel and spend most of my time in the Caribbean"; "I feel like I am 40, but my body tells me it isn't so. I have had three major operations, but am checked out by my doctors every six months and they tell me that I am fine. I believe very strongly that when you have a problem within your control, you do not go around complaining about it, but fix it at once. Of course, if this problem is out of your control, accept it, relax, and hope for the best. I look at life in a positive way and don't worry because it won't change anything anyway"

- "I'm the mother of 5 sons. I have been widowed 3 times. I have been blessed with a strong faith in God that has given me a very positive outlook through difficult times. My first husband was listed as missing in action after his plane was shot down in the Pacific. My second husband died of heart failure when I was 48, leaving me with 4 sons from ages 8-13 to raise alone. My first priority had to be to stay healthy. I jogged most every day. I had to remain strong and optimistic because my sons were facing challenges of their own without a father. At this point I remember thinking, 'If it doesn't kill you, it will make you stronger'. I still think that is the case. When all my sons were in college, I remarried and remained so until 2000, when my third husband died"; "I am 86 years old and strongly believe in moderation in all things and staying mentally and physically active. I play bridge 3 times a week, belong to a book club, and walk a mile most every day. I travel to California 3 times a year and to the Midwest once a year!"

- "My secret for longevity is to keep working! And if you are lucky, work at something you love doing! I was ordained

a rabbi in 1954 and received my PhD degree in 1957. I served as the Rabbi of Temple Beth El of Closter from 1959-1969, and then became Professor of Midrash and Homilectics at the New York School of Hebrew Union College where I still serve even though I will be 79. Let me now join my personal and professional life and give you the secret behind the secret: I teach Midrash, the way the Rabbis of old read the Bible. They noticed that Abraham was described as ‘old, advanced in years’ (Genesis 24:1) only after Sarah died. Out of their experience, they had already concluded that premature aging had four causes: marital discord, problems of child rearing, anxiety, and the effects of war. While Sarah was alive, Abraham had been able to surmount all four and so remained young—when Sarah died, he suddenly became old. The lesson the Rabbi’s drew from Abraham’s example was that a good wife can keep a man young. The reason that I have been able to keep working, keep teaching and keep enjoying what I do, is that I have and have had for 53 years, a very good wife, my dear Hanna!”

- “I am 77 years old and am in really good health, do not smoke, and have normal blood pressure and cholesterol; my diet consists of lots of fruit and vegetables, chicken and fish, with a minimal amount of red meat. I take various vitamins as well as calcium and take no medications except estrogen” ; “I take ballet lessons three times per week. I play tennis once per week and downhill ski about 30 days a season in the winter months”; “I enjoy traveling and take about three trips per year with my husband”

- A few words from the husband of the previous patient: “I am 80 and have been happily married for 55 years. I have a twin, as well as three other siblings who are 86, 93, and 95”; “I am very active in sports—I play singles tennis and downhill ski an average of 35 times per year; I walk a mile three times a week as well”; “I have never smoked and take no medications. My pulse is 60, but is 45+ when at rest, and my blood pressure is 120/70; “I am semi-retired as a consulting engineer”; “I have long lasting friendships”;

"I take vitamins daily and never eat butter or salt when at home; my breakfast is generally oatmeal with fruit and fat-free yogurt, and a glass of orange juice with cranberry juice and two cups of coffee with soy milk and sweet and low; on Saturdays I have one fried egg using olive oil, bagels with Farmer's cheese with raspberry jelly, and/or salmon with Farmer's cheese; on Sundays I have 3 slices of multigrain bread dipped in beaten eggs (one yolk) with soy milk, fried in olive oil, topped with fruit and fat-free yogurt; my lunch is usually a mixed salad, tuna fish salad, or multigrain bread with peanut butter and banana; my supper is typically fish—broiled salmon, tilapia, or fillet of sole; alternatively, broiled skinless chicken breasts—on occasion a broiled steak or lamb chops; string beans, broccoli, cauliflower, baked potato or sweet potato; at bed time I have two small dark chocolate tidbits and a scoop of fat-free frozen yogurt"

● *"I am 87 years old and own a liquor store. I work seven days a week, anywhere from 80-90 hours—I keep busy every day with a happy frame of mind"; "I never abused myself with liquor, fried or acid food, and never smoked"; "I have two children and three grandchildren, and although I have been divorced for 30 years, I keep friendly relations with my ex-wife and her family"*

● *"I am 90 and have been blessed with generations of kind, thoughtful, intelligent, beautiful children, grandchildren, great-grandchildren and extended families. When my beloved wife died four years ago, I found a wonderful friend and we have built a glorious new life together"; "I enjoyed a career in the public relations business. In retirement, I serve as a volunteer in the P.R. department of a hospital. My friend and I are devoted to fund raising for our synagogue, which is where we met in the first place"; "I love playing the organ and an electric piano and take lessons on both instruments"; "I wear a pacemaker and have had my share of medical problems. Thankfully, my friend and I are in good health, all things considered. We take time to enjoy life. We treat every day as a treasure"*

So, what can be learned from reading and analyzing the answers of those who have made it to a ripe “old” age while maintaining an excellent quality of life? It would seem that the attributes of aging *well* and aging *long* can be summarized as follows (not necessarily in order of importance, as each is important in its own way):

- ▷ An active existence
- ▷ Ample exercise and physical activity
- ▷ Mental engagement and commitment to interests and hobbies—reading, travel, games, art, music, crafts, pets
- ▷ A healthy diet
- ▷ Avoidance of self-abusive behavior—junk food, obesity, cigarettes, excessive alcohol—an “everything in moderation” attitude
- ▷ Continuation of working in some capacity to achieve purposeful living
- ▷ Close relationships with family and friends with sources of strength being a good social network and perhaps religious/spiritual pursuits; in particular, being in a good marriage seems to be a very important attribute of aging well
- ▷ Optimistic and grateful attitude—cheery, happy and upbeat dispositions with a sense of hope about what the future will bring, a good sense of humor and the ability to deal positively with stress
- ▷ The ability to adapt to loss or change
- ▷ Good genes!
- ▷ The practice of preventative maintenance (*after all, this information was obtained from a patient population who sought medical care from me on a regular basis!*)

If each attribute comprised one stone component of the entire stone floor foundation upon which stands the fountain of youth, I believe that the *keystone*, i.e., the central stone that holds all the other stones together, would be represented by an *active existence marked by intelligent*

lifestyle choices. My rabbi patient perhaps stated it most succinctly—*the secret to aging well is simply living well.* If one lives well, aging well will follow naturally. And living well implies an *active* existence.

“You have to work on longevity...” “My ‘secret’ is that you have to plan for your life. You need to plant the seeds and cultivate them well. Then you can reap the bountiful harvest of health and longevity.”

Jack LaLanne (92 years young!)

The Aging Well Formula

The basic formula for aging well is as follows:

Aging well = good genetics + good lifestyle choices
+ good luck

A long and healthy life is no accident. It starts with good genetics, adoption of a smart lifestyle, and more than just a little luck. Remember this, though: *quantity* of life is meaningless without *quality* of life. Quality of life requires a delicate juggling act in which there is a favorable balance of career demands, the oftentimes daunting task of raising children, and maintaining relationships with family and friends—all the while making the time for taking care of our *selves* through the pursuit of recreation, leisure activities and hobbies. This must include periodically leaving the rigors of work and everyday stresses behind to enjoy “down time” and novel, stimulating activities. The achievement of a long and healthy life is predicated on *continued* physical, emotional, intellectual, social and spiritual stimulation, that which makes us whole and fulfilled human beings.

A former employee of mine recently forwarded me the following joke circulating on the internet:

I recently picked a new approved primary care doctor. After two visits and exhaustive lab tests, he said I was doing “fairly well” for my age.

A little concerned about that comment, I couldn’t resist asking him, “Do you think I’ll live to be 80?”

He asked, “Do you smoke tobacco, or drink beer or wine?” “Oh no,” I replied. “I’m not doing drugs, either”

Then he asked, “Do you eat rib-eye steaks and barbecued ribs?”

I said, “No, my former doctor said that all red meat is very unhealthy!”

“Do you spend a lot of time in the sun, like playing golf, sailing, hiking, or bicycling?”

“No, I don’t,” I said.

He asked, “Do you gamble, drive fast cars, or have a lot of sex?”

“No,” I said. “I don’t do any of those things.”

He looked at me and said, “Then, why do you give a shit?”

We may not inherit much money, property or material items, but one thing is for sure—we all inherit our genes! So, aging well starts with your genetic inheritance, which provides you with the potential for longevity and continued youthfulness. Good genes coupled with the right lifestyle will combine to give you your best chance for lots of quality years of existence on this planet.

If you were not so fortunate as to be genetically endowed for longevity, lifestyle then becomes of paramount importance. A smart lifestyle implies a healthy diet with avoidance of harmful foods, engaging in abundant physical activity and exercise, achieving adequate hours of peaceful sleep, and avoidance of first-hand and second-hand smoke as well as other environmental toxins, excessive sun exposure, excessive alcohol intake and excessive stress.

Stress alone can do significant damage and literally wreak havoc on your longevity. People who age well seem to

have mastered the art of dealing with stress—they possess the ability to turn stress into positive energy, with the potential to actually become empowered by it! They do not, as a rule, allow external anxieties to become internalized and have developed means of coping well in the face of stress. These coping mechanisms may involve involvement in close personal relationships, exercise, music, humor, relaxation techniques (for example, meditation, yoga, breathing techniques or indulging in hot baths), or other unique and individualized means. I have personally found that the transformational power of music is a wonderful tonic to many stressful situations. Air travel is *particularly* stressful these days and for me, plugging in my iPod and tuning in to some great music is the perfect antidote that magically washes away the myriad of stresses associated with airports—crowds, long lines, TSA agents, delays, air turbulence, etc., etc., etc.

“The greater part of our happiness or misery depends upon our dispositions and not our circumstances.”

Martha Washington

One’s outer appearance and demeanor typically reflects one’s inner serenity, passion and attitude (or lack thereof). So a youthful countenance is impossible in the face of (no pun intended!) negativity, a bad attitude and unhappiness. In other words, radiance starts internally and emanates outwards. A happy, satisfied temperament is often reflected in a face that is youthfully radiant. Most everybody who is aging well and appears younger than their chronological age shares an optimistic attitude and positive energy. It seems that this internal spirit and flame strongly influence our outer appearance in a very positive fashion. A genuine smile originates in happiness and is generated by the unconscious neurological center that processes emotion.

*"To be eighty years young is more cheerful and hopeful
than forty years old."*

Fortune cookie wisdom.

The mind-body connection is an extraordinarily powerful bond. Emotional health is of paramount importance to wellness, fitness, and longevity. Many physical ailments are caused or exacerbated by negative emotions, i.e., irritable bowel disease, interstitial cystitis, fibromyalgia, migraines and tension headaches, etc. Clearly, pent up anger is bad and cathartic release is good. Emotional wellness and a cheerful disposition results in less facial muscle contractions and muscle memory that accompany worrying, frowning and grimacing—and thus, less facial creases, furrows and lines that make us appear older. Inner sanctity and peace of mind are also reflected in the nature of our posture, carriage and gait—features that can make us look either youthful or prematurely aged. The *youthful* elderly have a great capacity to enjoy the moment, smile, laugh, have fun and appreciate good-quality conversations and relationships. Being self-effacing and not taking life too seriously are other characteristics common to this group. This passion and zest for living, this *joie de vivre*, are clearly evident in its members' *external* characteristics:

As a charming old lady once said, "To remain always young one must be always amiable. A melancholy face, a sullen or evil look, is like coming in contact with winter; whereas a serene face, a gracious air, a kind and good expression, are like a spring day, and a smile on the lips like its sunshine. Sulky people, you may have remarked, always appear to be ten years older than they really are. The face grows wrinkled contracting the brows; the mouth projects disagreeably when sulking. Behold beside the portrait of the sullen woman the picture of a sweet and gracious woman: all her features are in repose, her lips form an adorable Cupid's bow, kindness softens her glance, and

goodness illuminates her brow. Perhaps she is the elder, but she will always appear young and charming.”

The Art of Appearing Always Young
(Originally Published in 1907), Author Unknown

Exercise and Aging—Survival of the Fittest

“Of all the forces which conspire to render the life of a man short and miserable, none have greater influence than the want of proper exercise.”

Dr. William Buchnan (18th century Scottish physician)

There is compelling evidence that a sedentary lifestyle substantially increases one’s risk of many chronic diseases and is a key limiting factor to longevity. With respect to exercise influencing longevity, determination and persistence trump innate athletic ability. A middle-aged person who undertakes endurance training will often live longer than a college athlete who peaks early and becomes a couch potato thereafter. A Harvard alumni study scrutinized mortality rates in more than 10,000 men over a twenty-year time span. The study concluded that longevity was increased by approximately two years in those alumni who exercised moderately as opposed to sedentary alumni, and that the longevity-increasing abilities of exercise were proportional to the *quantity* of exercise performed. Dr Ralph Paffenberger, one of the lead investigators in the Harvard study, contended that for each hour that a person exercises, they will get back two hours of increased longevity.

My own theory of exercise and aging is a bit more generous and to be taken with many grains of salt—yet in my *heart of hearts*, I believe that for every one hour spent doing *vigorous* aerobic exercise (sweat-inducing exercise at about 75-80% of maximum heart rate), you will get back that hour plus “interest” of an additional two hours, for a total

of 3 hours of increased longevity. So, if you deposit in your “exercise account” 5 hours per week, in one year you will have accumulated 260 hours or about 11 days of exercise. This will buy you 33 days of added life for the one year of physical effort. If you do this every year from age twenty to eighty, you will ultimately accumulate more than 5 years of added longevity! Honestly, the hard, cold truth is this: I do not think that anybody, including myself, has any real idea of what the precise quantitative return of investment of aerobic exercise is. However, I do know unequivocally that it is *significant*. It will, for most of us, help to maximize—at the very least, certainly increase—our longevity. It will, while we are here on this planet, provide us with added vigor, vitality and an aura of youthfulness. It IS truly a good thing.

The primary reason that exercise results in increased longevity is the achievement of cardiovascular fitness. When it comes to a long life, the most important muscle to keep fit is the *heart*—our muscle of longevity. Cardiovascular *unfitness* is too often responsible for premature dying. It is important to remember that, in order to maintain a fit heart, one must engage in endurance and aerobic-type exercises, such as swimming, cycling, running, etc., (as opposed to resistance and flexibility training, as important as they are). Remember the myriad of salutary effects of aerobic exercise including: an *increase* in maximal cardiac output, blood vessel elasticity, bone mineralization, muscle mass, metabolic rate and HDL cholesterol; and a *decrease* in body fat, blood sugar, LDL cholesterol, resting heart rate and resting blood pressure and blood viscosity. So, maintaining a healthy heart and vascular system will minimize one’s risk of hypertension, cholesterol elevation, obesity, heart attack, stroke, diabetes and peripheral vascular disease, any of which can severely compromise longevity.

“Exercise thy lasting youth defends.”

John Gay (British poet)

Your Exercise Account: Building Sweat Equity

We save for retirement. We earmark money for Individual Retirement Accounts and 401K plans, annuities and other similar retirement vehicles that allow us to sock away money in investments for the future. Someday, we will no longer be working and will need to tap our savings to live.

Sadly, many people seek and ultimately obtain financial *wealth* at the expense of their *health*, not realizing the fact stated so clearly by poet/author Ralph Waldo Emerson that, “*the first wealth is health.*” Without health, having financial wealth is absolutely meaningless!

Sweat equity is a business term used to describe the non-financial contribution of *time* and *effort* that is fundamental to the success of a business endeavor. I am going to borrow this term and extend its use to the fitness and health arena. As we hopefully have retirement savings accounts, I propose that we all have a *Sweat Equity Account*—basically, a *Fitness Account*. It consists of *time* and *effort* put into exercising and maintaining fitness. The principles of obtaining and maintaining a fitness account are similar to the principles of obtaining and maintaining a retirement account and are as follows:

- Have a plan. Understand the need for and the importance of your fitness account. If you invest wisely in this account, it will pay you back in *spades*.
- Pay yourself first. Carve out the time for fitness and commit to it automatically—this guarantees that it is a priority to be tampered with only under the most unusual circumstances. This will ensure regular deposits to build your personal fitness nest egg.
- Slow and steady approach. A moderate amount of exercise, deposited to the account on a diligent and regular basis, will ultimately allow for complete funding of your fitness account.

- Start early. The earlier you begin the fitness account, the more time available to work the magic of compounding, when the investment returns themselves earn further returns. You will earn returns in the form of “interest and dividends” (improved quality of life) and “capital gains” (augmented quantity of life). If you missed the boat on starting early, don’t waste another minute...start today. It is never too late.
- Long-term perspective. The greater the investment in terms of time invested, the larger the fitness nest egg builds. The commitment to this plan needs to be a lifetime endeavor. No gimmicky investments! No shortcuts! No tricks or instant rewards!
- Seek investment counseling. Not everyone is capable of managing their own fitness account—if not, seek the services of a professional personal trainer or fitness instructor.
- Diversify. Deposit into your account all different forms of fitness investments, including aerobic and endurance exercise, weight training, flexibility, etc....include lots of variety in your portfolio. Shake it up a bit.
- Eliminate debt. Pay down and eliminate debt, of which one component can be thought of as the fitness deficit that you owe yourself from past exercise omissions. The other component should be thought of as your current debt in terms of excessive body weight and the burden of bad lifestyle choices. You will reap the benefits of becoming debt free through exercise and healthy habits.

Your contributions to your Fitness Account will ultimately make you wealthy; that is, “*healthy wealthy*”...it just takes time and tenacity.

“Living is a pain in the butt. Dying is easy. It’s like an athletic event. You’ve got to train for it. You’ve got to eat right. You’ve got to exercise. Your health account, your bank account, they’re the same thing. The more you put in, the more you can take out. Exercise is king and nutrition is queen: together, you have a kingdom.”

Jack LaLanne (2006)

Grooming Young

Meticulous personal hygiene and grooming is an obvious component of a healthy existence; it is also an absolute necessity for maintaining a youthful and aesthetically appealing appearance. Every external body part requires some basic degree of attention on a continual basis. To be unkempt is often regarded as being unattractive and undesirable and does not foster a youthful, fresh appearance. Bathing regularly is important in order to keep our skin and external parts clean and free of oils, sweat, pollution, dirt, bacteria, odors, etc. A good quality soap or body wash using a loofah or bath sponge will help to exfoliate the outer skin layer, unmasking the glowing, healthy, more youthful layer below. A moisturizing cream is useful, particularly in the cold, winter months as it can help to eliminate dry, cracked, scaly areas and can also reduce the appearance of fine lines and wrinkles! The same thing goes for the use of moisturizing balm on one’s lips.

Our hair can be thought of as our “crowning glory” and often gives an indication of our age. It obviously needs to be cut, washed, and brushed or combed. Our mane is often one of the first areas of the body that attention is drawn to—having greasy or oily hair or dandruff contributes to a negative physical appearance, in the same way that flowing and luxuriant locks contributes to a positive physical appearance. Coloring the hair is an ever popular means of looking youthful, particularly with

women, although many men as well now find comfort in using products to eliminate their graying hair.

Facial shaving is an important component of good grooming for men, as is shaving the axillary areas and legs for women (at least in the United States). Waxing body hair is gaining in popularity among both genders, and many younger adults are now even shaving the pubic and groin region. Keeping bushy eyebrows and unwanted ear and nasal hairs trimmed will help maintain a youthful appearance. Increasingly, women are bleaching unwanted upper lip hair. Spending a few extra dollars at the salon, the barbershop, or the drugstore can go a long way in helping to keep us all looking and feeling better—to ourselves and to the outside world.

Brushing our teeth at least twice a day (including before going to sleep), coupled with rinsing after meals and daily flossing, is an essential component of dental care. A soft toothbrush will spare the gums of unnecessary trauma that can contribute to erosion. Non-abrasive, fluoridated toothpaste is a prudent choice. Some people find that devices such as electric toothbrushes and water jet devices such as the water pik are very helpful in maintaining good oral hygiene. Cosmetic dentistry has become a huge and thriving industry and many people are willing to undergo various procedures (including teeth whitening, dental bonding, implants, tooth veneers, etc.), in order to retain their youthful smile. Even braces are no longer just for teenagers!

Our hands get as much exposure to the elements as our faces and can provide a good indication of our age. Sporting a presentable pair of hands with clean and well-cared-for nails is an important component to proper grooming. Hands are often particularly susceptible to dryness because of frequent washing and constant use, so applying a moisturizer can be very helpful in

maintaining soft and supple skin. It is no surprise that professional manicures and pedicures have become a regular part of many women's (and men's!) self-care regimens. Calluses and dead, roughened skin on our feet can be managed using a pumice stone or other abrasive materials, followed by an application of a moisturizer. Quality shoes will go a long way towards helping to prevent many potential foot/toe problems.

How we dress often gives insight into our age. Sharp and stylish dressing can dramatically help to maintain a youthful appearance. If you can afford it, it is a good idea to periodically update your wardrobe! If your clothes reek of mothballs, it is a *dead giveaway* that your fountain of youth may be tending towards the dry side! Certainly, too, one's clothes should be clean and pressed. The bottom line is: *everything* about you, internally and externally, should be clean and fresh, from your arteries to your skin right down to your underwear!

Remaining Active: *Working Retirement*

"Resting is rusting."

Helen Hayes (screen/stage actress, 1900-1993)

Importantly, remaining active seems to be a characteristic common to most every person who is aging youthfully. The adage, *a rolling stone gathers no moss*, seems to be particularly relevant. Many "youthful elders" continue to work or volunteer their services and time way beyond that expected of them by our society, not because they *financially need* to, but because they enjoy and feel a compelling *personal need* to remain engaged and useful. For many people, work not only helps define them, but is also a means of "giving back" to society. In addition to satisfying a basic human need to remain productive and to provide a sense of power and accomplishment, work functions to nourish the mind, soul and spirit and helps provide a means of

maintenance of a community of social networks and strong *connections* to the outside world, which seems to be a quintessential element of aging well. Being alone, and being lonely, can have a significant negative impact on one's health and well-being. It can even prove deadly. So, it is important to get up, get out and *do something*! Continuing work in some capacity helps ward off depression, boredom, and a sense of uselessness—potential major issues in the aging population that are retired from work and involvement in other productive activities.

The “well-aged” remain active in terms of physical activities, whether it is going to the gym, engaging in sports, dancing, gardening, etc. Creative mental activity—keeping the mind alert and “lubricated”—is another trait embraced virtually universally by this segment of the population. The youthful elderly do not allow their brains to idle. Whether it is art, music, reading, writing, crossword puzzles, sudoku, bridge, chess, theatre, cinema, museums, hobbies, crafts, adult education classes, you name it, it is clear that such people value their time and maintain a vigorous, mentally-stimulating schedule with a quest for learning and knowledge that never stops. The youthful elderly seem to have mastered the fine art of *balance*—the ability to juggle work and recreation, family and friends, stress and serenity in such a way as to foster a deeply meaningful and satisfying existence.

“The active life is not one of denial and deprivation, nor is it one of pain and hurt. It is a joyful experience, an affirmation of what we can be physically, mentally, socially, and spiritually.”

Quote from past president of the American College of Sports Medicine

Medical Advances Are Improving Longevity and Quality of Life

To paraphrase Brian Wansink, author of *Mindless Eating: Why We Eat More Than We Think*, the 19th century was the *Century of Hygiene* (improved public health and sanitation saved more lives than any other cause), the 20th century was the *Century of Medicine* (vaccines, antibiotics, transfusions, chemotherapy, etc., helped contribute to longevity), and the 21st century will be the *Century of Behavior Change*—where longevity will be furthered by reducing risky behavior and making positive changes with regards to exercise and nutrition.

Advances in every medical discipline have made meaningful contributions to improving our lifestyles and longevity. In 1900, the average life expectancy was about 50 years; when I was born in 1955, it was under 70. The current average life expectancy is 78. Obviously, it is much better to avoid the need for medical and surgical intervention by adhering to proper diet, exercise and a healthy lifestyle; but when things go awry, we can all be very thankful for these significant medical technologies.

Pharmacological advances have been a major boon to maintaining our quality and quantity of life. *Pharmacological developments* have occurred at an astonishing rate—medications for immunization, diabetes, hypertension, angina, heart failure, elevated cholesterol, anesthetic agents, antibiotics, anticoagulants, analgesics, anti-depressants, anti-arrhythmia agents, clot-busting medications, anti-inflammatory medications, chemotherapy for cancer, immuno-suppressants to prevent transplanted organs from being rejected, etc., to name just a few categories. These medications are used ubiquitously, and have made a very real contribution to our longevity.

Explosive technological growth, including the availability of computers, broad-bandwidth communications, robotics and lasers, has transformed the practice of medicine. *Tele-medicine*, the integration of telecommunications, the internet, multimedia and robotics, can permit the provision of medical and surgical care on a global perspective. *Tele-consultation* permits long-distance consultation between a physician and a patient in a remote location; *Tele-rounding* permits remote conferencing between a physician and a hospital inpatient and can be facilitated by remote controlled service robots; *Tele-surgery* permits a surgeon at a location remote from the patient to perform a robotic-assisted surgical procedure. *Tele-radiology* has been around for several years, allowing physicians rapid electronic access to imaging studies on their patients. If you come into the emergency room with a broken bone, chances are that the radiographic images are stored on a *PACS System* (Picture Archiving and Communication System) and that the orthopedist can view them from his home personal computer in order to provide prompt advice to the emergency room physician. *Tele-pathology* allows pathologists at a location remote from the hospital transmission of the histology image.

Fiber optic technology has enabled physicians to inspect many areas of the body that were previously inaccessible or required an open operation to do so. As a urologist, the *cystoscope* is the equivalent of the cardiologist's stethoscope—this narrow-caliber, flexible, fiber optic device allows us to have an incredible view of the urethra, prostate, and bladder. The image is crystal-clear, magnified, and viewable on a video monitor that the patient can observe. An extension of the cystoscope is the *ureteroscope*, a device that allows us to look all the way up into the kidneys. Not only are these tools diagnostic, but treatments can be performed through them, for example, removing a bladder tumor or kidney stone. Fiber optic technology is used by gastro-enterologists when they

do colonoscopies, by orthopedists when they do arthroscopies, and by many other medical specialties.

Diagnostic imaging advances in *ultrasonography*, *computerized tomography (CT)*, *magnetic resonance imaging (MRI)*, *positron emission tomography (PET)*, and *mammography* have been extraordinary and have been rapidly adopted and integrated into the medical armamentarium. Not only do these techniques provide superior imaging, but they have reduced the need for exploratory surgery and have allowed for minimally-invasive procedures, typically performed by the interventional radiologist, such as injecting material into an artery to stop bleeding. Unlike traditional imaging studies that provide *anatomical* data, positron emission tomography provides valuable information about *function*. PET scans study specific biological processes, such as glucose metabolism (malignancies generally have a higher rate of glucose metabolism), and generate a functional image of disease processes. With the advent of combined PET/CT scanning, the anatomical detail of the CT can be interfaced with the functional detail of the PET, providing amazing images that can greatly help guide the process of clinical decision making.

The Human Genome Project, an international effort to determine the complete sequence of all human genes, was completed in 2003. This complete sequencing of human DNA was a spectacular technological feat—just consider this fact: we now have available the entire coding system that essentially is the recipe for making a human being!

Paralleling this, advances in *genetic testing* are proceeding at an incredible rate—almost one thousand genetic tests are now offered by diagnostic laboratories. For example, *BRCA1* and *BRCA2* genes are associated with a high incidence of breast and ovarian cancer and testing those with a strong family history can help determine who will

need careful surveillance or prophylactic treatment. Expectations are that a much longer list of genetic tests will become available in the not too distant future and that the major genetic factors involved in susceptibility to common diseases will ultimately be revealed. Such information will help lead the scientific and medical communities toward more effective treatments and cures.

Minimally-invasive techniques including *laparoscopy*, *robotics*, and *lasers*, have revolutionized surgery. They have resulted in shorter hospital stays, smaller incisions, decreased pain, less blood loss and faster recovery as compared to conventional surgery. *Laparoscopic* technology involves the use of small telescopes that provide a magnified and enhanced view of the operative site, while avoiding the need for a traditional incision. *Robotic* technology allows a surgeon to sit at a console remote from the patient and perform surgical maneuvers that are reproduced in real time by miniaturized robotic instruments placed via laparoscopic technology. The surgeon's fingers are inserted into surgical joysticks that provide control of the instruments—the three dimensional view is magnified ten-fold and provides seven degrees of freedom (each direction a joint can move is a degree of freedom) at the instrument tips.

In urology, robot-assisted laparoscopic prostatectomy for treatment of prostate cancer has rapidly gained promise as an alternative to the traditional approach. *Lasers* are used ubiquitously in medicine; in the field of urology they have become the treatment of choice for fragmenting urinary tract stones and for vaporizing prostate tissue that causes the obstructive symptoms of benign prostate growth. Coming into vogue at this time are *trans-cutaneous ablative* processes for small kidney tumors—instead of an open or laparoscopic procedure, a cat scan guided needle is put into the tumor which is destroyed by *cryotherapy* (freezing) or *radio-frequency waves* (heat destruction).

The future holds advances in molecular genetics—there will come a time when we will be able to obtain a molecular implant of any given tumor. To quote Dr. Arie Belldgrun (Urological Oncologist at UCLA), “The signature of the tumor will allow us to fully assess the genetic nature of the enemy, how aggressive it is, what its metastatic intentions are, what it is sensitive to, and how best to attack it. At the same time, we will be armed with a whole battery of potent oral agents capable of targeting specific signaling pathways in the tumor.”

Organ transplants are available for the heart, lungs, intestine, kidneys, pancreas, corneas, and now our faces! *Joint replacements* are available for the knee, shoulder, hip, ankle, and fingers. *Cardiac valve replacements* are available for the aortic valve, mitral valve, and tricuspid valve. *Pacemakers, implantable cardioverter-defibrillators* (automatically detect a life-threatening abnormal heart rhythm and shock the heart), and balloon angioplasties with *coronary stents* are used on an everyday basis by cardiologists to enhance and prolong the lives of their patients. *Artificial lenses* are implanted by ophthalmologists in patients whose vision is clouded by cataracts. In the field of urology, we implant *artificial urinary sphincters* for male incontinence, *inflatable penile prostheses* for erectile dysfunction, *polypropylene mesh* for female stress urinary incontinence and pelvic relaxation and a bladder pacemaker, *the interstim device*, for voiding dysfunction. The scene has been set medically and technically to help us maximize QUALITY longevity.

Cosmetic Advances

Unhappiness with the appearance of our aging faces and bodies has engendered a multi-billion dollar cosmetic industry and is responsible for the ever-increasing demands for dermatologists and plastic surgeons. Many desire their furrows to be unfurrowed, their wrinkles and

creases to be unwrinkled and their less-than-plump lips to be plumped up. As the television commercial states, “parentheses are good, but not on your face.” The armamentarium of available products and services includes: *moisturizers*; *topical retinoids*; *chemical peels*; *dermabrasion*; *laser resurfacing*; injections of *botulinum toxin* (“*botox*”); *fat*; “fillers” including *Collagen*, *Restylane* and, most recently, *ArteFill* and *Juvederm*—all for the purpose of filling in wrinkles, creases and folds; *hair weaving* or *hair transplants*; *laser hair removal*; *sclerotherapy* for spider veins; and innumerable cosmetic plastic surgery procedures, of which the big five are the following: *liposuction*, *nose reshaping*, *breast augmentation*, *eyelid surgery*, and *facelifts*. It seems that many of us desire to maintain our youthful looks and vitality for as long as we possibly can!

Anti-Aging Medications

Although the best solution to aging well is living well, there are medications that, when used in the appropriate circumstances in combination with a healthy lifestyle, can help us maintain our youth. There are obviously numerous medication classes that contribute to longevity including the anti-hypertensives to control high blood pressure and the statins to reduce cholesterol, etc. My discussion will be limited only to a few classes of medications, particularly those that are germane to a urologist.

Anti-oxidants

The process of *oxidation* occurs with time: the presence of *oxygen* and *water*, coupled with sufficient *time* for the oxidative chemical reaction to occur, is capable of altering physical appearances—and, unfortunately, not for the better. For example, oxidation is the process responsible for changing the original copper-colored Statue of Liberty

into the greenish hue it now appears or for turning the exposed inner portion of a cut apple brown. Oxidation will corrode the exposed iron in a scratch on your car, creating rust. This very same process can promote the aging of our cells, the *rusting of our cellular structure*, if you will.

The *oxidative stress theory* hypothesizes that, over the course of many years, oxidative damage occurs by the accumulation of the by-products of our metabolism as well as oxidative damage from environmental toxins to which we are all exposed; this accumulation is called *reactive oxygen species* (also known as *free radicals*), and engenders diseases, aging and, ultimately, death. These reactive oxygen species adversely affect normal cell functioning. For example, free radicals can attack collagen and elastin (responsible for skin elasticity and tone), resulting in aged-appearing, wrinkle-laden, saggy skin. Free radicals can also damage cells in the eye, causing age-related macular degeneration, which is a leading cause of blindness. Interestingly, studies in laboratory animals suggest that a restriction in caloric intake will result in less accumulation of these harmful free radicals. Studies have also shown that free radical accumulation can be reduced through exercise.

So, the great irony is that oxygen is an absolute necessity for life, but reactive oxygen species can shorten life. What to do? *Anti-oxidants* can slow the oxidative damage process. These are vitamins, minerals and enzymes that act as “scavengers” that can mitigate the damage caused by the reactive oxygen species. The most common anti-oxidants are Vitamins A, B-6, B-12, C, E, folic acid, lycopene and selenium. Many plants contain anti-oxidants—they are found in beans, fruits, vegetables, grain products and green tea. Brightly-colored fruits and vegetables are good clues as to the presence of high levels of anti-oxidants—berries, cantaloupe, cherries, grapes,

mango, papaya, apricots, plums, pomegranates, tomatoes, pink grapefruit, watermelon, carrots, broccoli, spinach, kale, squash, etc.—are all loaded with anti-oxidants. In addition to a bountiful intake of anti-oxidants, minimizing exposure to first-hand and second-hand cigarette smoke as well as excessive ultra-violet radiation from sunlight can help control harmful free radical accumulation.

There are some potential negatives to the use of anti-oxidants. For example, beta-carotene (Vitamin A) supplementation has been linked in some studies to an increased risk of lung cancer in smokers. Very high doses of Vitamin E in those with heart disease or diabetes have been associated with an increased risk of heart failure. It seems that the jury is still out and no one truly knows all of the salutary effects of anti-oxidants on the aging process. Hopefully, ongoing scientific studies will further elucidate this matter. For the meantime, the best advice is to eat your fruits and vegetables, especially brightly-colored ones. If your diet is inadequate in these terms, vitamin supplements *in moderate doses* can be an excellent source of anti-oxidants and may be considered a beneficial dietary measure until proven otherwise.

Aspirin

Aspirin is a non-steroidal anti-inflammatory drug (NSAID) widely used for its ability to neutralize pain, inflammation, and fever. Additionally, aspirin has been shown to have a cardio-protective property, in which low dosage intake has been shown to help prevent cardiovascular disease, including angina, heart attacks, peripheral vascular disease, transient ischemic attacks and strokes. It acts on platelets, reducing the clotting tendency of the blood; as well, its anti-inflammatory action may play a role as atherosclerosis may be an inflammatory disorder of arteries.

Low-dose aspirin can be beneficial in helping to prevent cardiovascular events, but is also beneficial in those actively having a heart attack or an ischemic stroke (not a hemorrhagic stroke), and for use in those after cardiovascular events. The benefits of aspirin must be weighed against the potential adverse effects, particularly gastro-intestinal upset and an increased bleeding tendency. To mitigate gastro-intestinal upset, aspirin should be taken with meals or in enteric-coated formulation. Aspirin can prolong bleeding via its effects on platelets and needs to be stopped for about one week prior to surgical or dental procedures.

The bottom line is that the cardio-protective effect of a daily 81 mg aspirin (baby aspirin) probably outweighs the small risk of adverse effects in the male population. Some insider information: many cardiologists take a daily aspirin! In the female population, aspirin has not been shown to reduce the risk of heart attacks, but has proven helpful in preventing ischemic stroke.

5-Alpha Reductase Inhibitors (5-ARIs) ** FOR MEN ONLY!

More than thirty years ago, in an isolated village in the Dominican Republic, the discovery of “*guevedoces*” (literally meaning “*penis at twelve years of age*”), initiated a revolution in the treatment of both prostate enlargement and male-pattern hair loss. Guevedoces is the name given to a group of *intersex* children—biological males with female-appearing genitals who, surprisingly, developed typical male genital anatomy at the time of puberty.

These children had a genetic mutation leading to a deficiency of the enzyme *5-Alpha Reductase*, which functions to convert the male hormone testosterone into dihydrotestosterone (DHT), the activated form of the male hormone. This mutation was found to occur in 2% of the

male births and these by all outward appearances *female* children were initially raised as girls until puberty, at which time the tiny penis (thought to be a clitoris), developed into a normal-size, functional penis; at the same time, the testicles, previously not within the scrotal sac, descended into the scrotum and other male characteristics developed in terms of libido, musculature, voice change, etc. As these “guevedoces” aged into adulthood, however, they were found to grow only scant facial hair, never developed acne or hair loss and had minimal prostate gland development.

Based upon these findings, Merck Pharmaceuticals synthesized a 5-ARI drug in their laboratories, with the hope that this medication would shrink enlarged prostates and prevent hair loss, as had naturally occurred among the guevedoces. Merck’s concept was successful and the legacy of the guevedoces is a new class of medications known as 5-ARIs, which includes Finasteride (Proscar and Propecia) as well as Dutasteride (Avodart). When these medications are taken by adults, they result in shrinkage of the prostate gland with potential improvement of the symptoms of prostate enlargement, reduction in serum prostate specific antigen (PSA), regrowth of hair loss (most commonly at the crown of the head), and a risk reduction for prostate cancer.

In many senses, these 5-alpha reductase inhibitors can be considered anti-aging medications insofar as they combat many manifestations of the male aging process—hair loss, prostate growth, prostate cancer and PSA elevations. Proscar and Avodart are similar medications manufactured by competing pharmaceutical companies and approved for the treatment of prostate enlargement, but have the collateral benefit of promoting hair regrowth. Propecia is an identical formulation to Proscar but is one-fifth of the dose and is approved only for male-pattern baldness.

At the time of my ten-year medical school reunion in 1991, I was staying in a hotel room that had a series of side mirrors in addition to the standard full length frontal mirror. Before a black tie affair, I took a good look at myself in this complex of mirrors and noticed for the first time that the hair on my crown was thinning. I chose to deny it and did not even give it another thought until a number of years later, when I received the disheartening news from my wife and father that I had a sunburn on my crown! Oh, no—this did not appeal to my sense of vanity at all! I tried topical Minoxidil (Rogaine) but it was not effective, so I started taking Propecia every morning. Lo and behold, about six months later, I was somewhat surprised to find that my exposed pate was filling in. About a year or so after starting the Propecia, the vertex of my head had a full regrowth of hair. When the Veterans Administration report came out revealing a 25% risk reduction for prostate cancer associated with the use of Finasteride, this cinched it—particularly insofar as my father had been diagnosed with prostate cancer at age 65. Here is a drug that fixes my bald spot, shrinks my prostate, and helps prevent prostate cancer of which I have a positive family history. It seemed like a win-win situation, a no-brainer! I will share with you a little insider information—there are many urologists and other physicians who avail themselves of this class of medications.

Sex hormone replacement therapy

Estrogen (the female sex hormone) and *testosterone* (the male sex hormone) are hormones that promote the development of female and male physical changes that occur at the time of puberty. These physical changes in females include: breast development, menstruation, and pubic, axillary and leg hair; in males they include: facial and body hair, deep voice, prominent Adam's apple and muscle mass. Throughout adulthood, these hormones help maintain libido and sexual motivation and also function to promote bone health. These hormone levels

will disappear or diminish with the aging process; this generally happens rather acutely in women (*menopause*), and much more slowly in men (*andropause*). Andropause is similar in many respects to menopause but, unlike women, men do not have an obvious manifestation of its occurrence, such as the cessation of menstruation.

Menopause refers to the termination of production of the female hormone estrogen by the ovaries. The average onset of menopause is fifty years of age, but this can be quite variable. With the occurrence of menopause, menstruation stops and fertility potential is lost. The clinical features of menopause are caused by the estrogen deficiency and include: hot flashes, mood disturbance and irritability, loss of elasticity and suppleness of the vagina and urethra (which may contribute to urinary incontinence and sexual dysfunction), osteoporosis and breast atrophy.

Andropause is similar in many respects to menopause; however, it is characterized by a *gradual* decline in the male sex hormone testosterone that occurs over a prolonged period of time—approximately a 1% decrease each year after age 30. The decline in these levels will occur in virtually all men. However, this will not always translate into *significant* symptoms. When symptoms do occur, they may include: fatigue, irritability, depression, decreased libido, decreased energy and sense of well-being, loss of muscle and bone mass, increased body fat and erectile dysfunction.

An acceleration of the aging process can often occur after menopause and andropause. The sex hormones estrogen and testosterone are essential for making us feel our masculinity and femininity, respectively. In many cases, hormone replacement therapy (HRT), although somewhat controversial, may improve the symptoms of menopause and andropause and help maintain youthful vigor.

In a man, HRT would only be a consideration in a symptomatic patient with documented low testosterone levels. In males, HRT can increase libido, energy, well-being, mood, muscle and bone mass, strength, and also improve sexual function and symptoms of anemia, as well as have a beneficial effect on lipid profiles; likewise, it can decrease cardiovascular risk and Metabolic Syndrome, defined as having three or more of the following: high glucose; abdominal obesity; high fats (triglycerides); low levels of the “good” cholesterol (HDL); and high blood pressure.

Negative side effects may include: promotion of benign and malignant prostate growth, sleep apnea, aggression, testicular atrophy, infertility, baldness, acne and high red blood cell counts (polycythemia), which can put one at risk for stroke. Testosterone concentrations in the blood are highest in the early morning hours and decrease over the course of the day. Testosterone, in the form of a gel, is rapidly absorbed through the skin, convenient to administer and, when applied to the skin of the upper arms in the morning, will simulate this testosterone biorhythm.

HRT is much more common in females. It can help reduce loss of bone mass and potential fractures, alleviate hot flashes, have a beneficial effect on the heart, improve mood, well-being and feelings of fatigue, and can also improve sexual and urinary function. On the negative side, HRT can increase the risk, to varying degrees, of: breast and uterine cancers, blood clots in the legs and strokes.

DHEA (Dehydroepiandrosterone)

DHEA is a natural steroid hormone predominantly manufactured by our adrenal glands. It is produced from cholesterol by the action of several enzymes, and is considered the dominant steroid hormone, the precursor

for the sex steroids testosterone and estrogen. So, although the lion's share of testosterone and estrogen are produced by the testicles and the ovaries, respectively, the adrenal gland also contributes to their production via DHEA.

DHEA can be purchased over the counter, as opposed to testosterone and estrogen which require prescriptions. DHEA can have a myriad of anabolic effects, and some sources have postulated that these are beneficial in terms of maintaining libido, lean muscle mass, and fat metabolism. There certainly has been a lot of hype and hoopla about this hormone having anti-aging properties because of the fact that it is converted into testosterone and estrogen.

We really know very little about DHEA and some have referred to it as nothing more than “snake oil”. One thing is for sure—DHEA is a potent steroid hormone that when used as a supplement has no proven benefits and can have potential serious adverse effects—it truly should only be used under the supervision of a physician. It is surprising that DHEA has slipped under the radar screen of the Food and Drug Administration, as it is still available ubiquitously in stores that sell vitamins and other “health” products. Until scientific studies demonstrate evidence to the contrary, the recommendation is to not take DHEA.

Human Growth Hormone (HGH)

Like testosterone, HGH or Somatotropin is an *anabolic* hormone, a chemical that stimulates growth and cellular reproduction in many of our tissues. HGH is manufactured and released from the pituitary gland and is secreted in the first few hours of sleep and after exercise. It causes an increase in height, stimulation of cartilage and bone growth, an increase in muscle mass and a decrease in fat mass. It is essential to the process of childhood growth

and puberty and its deficiency causes short stature and growth failure, which can be treated by synthetic HGH. Excessive HGH release can cause *pituitary gigantism* in children and *acromegaly* in adults, a condition marked by progressive enlargement of the head, face, hands, feet, and thorax. In 1990, Dr. Daniel Rudman published an article in the New England Journal of Medicine entitled *The Effects of Human Growth Hormone in Men Over 60 Years Old*, concluding that HGH treatment resulted in an increase in muscle mass, bone density, and skin thickness and a decrease in fat density.

It is a fact that HGH levels diminish along with the aging process. Although HGH levels do indeed decline with age, it has never been proven that HGH replacement in an adult, in an effort to simulate the levels of HGH in youth, is beneficial in terms of any anti-aging potential. However, numerous anti-aging ‘centers’ have been spawned that promote the use of synthetic HGH to “reverse” the aging process by utilizing the anabolic properties of HGH that facilitate bone and muscle growth. It is my impression that these centers that are aggressively promulgating the use of HGH as an anti-aging panacea are engaging in charlatanism, hucksterism, and quackery. The jury is still not out on the down side of HGH replacement, with potential adverse effects that may include fluid retention, carpal tunnel syndrome, joint pain and hypertension. Considering this lack of proven efficacy, expense and potential significant side effects, the use of HGH in adults is not recommended, with the exception of cases of hypopituitarism and growth hormone deficiency. A January 2007 article in Annals of Internal Medicine by Hau Liu, a researcher at Stanford University School of Medicine, reviewed many published studies (a meta-analysis) on HGH therapy and aging and found no data to support the life extension claims and concluded that its use incurred a substantial potential for side effects.

Phosphodiesterase type-5 (PDE-5) inhibitors

Ah, serendipity! Viagra was originally conceived as a drug to treat angina, and when a clinical trial was performed, a most interesting side effect of enhanced erections was noted. When the trial concluded, men came back literally *begging* for more of this magic elixir, and hence was born the new class of medication—PDE-5 inhibitors—to treat erectile dysfunction. Prior to the availability of these medications, the management of erectile dysfunction was either a visit to a sexual counselor, a urethral suppository, vacuum suction device, penile injection, or penile implant. The PDE-5 inhibitor class of medications have, for all intents and purposes, *revolutionized* the treatment of erectile dysfunction.

PDE-5 inhibitors are a class of *vasoactive* drugs (medications that work on blood flow), which have achieved remarkable success for the treatment of erectile dysfunction. Their mechanism of action involves inhibition of the PDE-5 enzyme, an enzyme that under normal circumstances will result in loss of an erection.

Sildenafil (Viagra), Tadalafil (Cialis), and Vardenafil (Levitra) are the three medications in this class that are currently FDA approved for the treatment of erectile dysfunction, resulting in improved erectile rigidity and durability. These medications do not work alone and require sexual stimulation in order for them to work properly. Cialis, known as “the weekender” (because of the fact that, when taken on a Friday it will remain active in the system for pretty much the entire weekend), has a much longer duration of action than Viagra and Levitra, and thus may confer some advantages in terms of spontaneity. It is important to know that not all men can take this class of medication. If you are on any type of cardiac nitrate, you CANNOT use a medication of this class. There are also relative contraindications to their use, so NEVER, EVER

take any of these medications without first consulting your physician.

These medications won't help men live longer, but they can help turn back the clock in terms of improving erectile function. In the sense that they allow many men to function sexually in a similar fashion to the way they did at the peak of their sexual abilities, these medications certainly play a role in improving quality of life and achievement of a *youthful* existence. Many men who cannot function sexually may be able to do so on these medications, and many men who can function sexually will notice a significant enhancement; hence the high prevalence of recreational use of these medications. These medications truly have the capacity of converting erectile dysfunction into erectile function and from transforming erectile function into erectile-superfunction!

Alright, I confess—I have tried this class of medications, but only in the name of science and in the interest of “medical research”! Here is my honest take on the PDE-5 inhibitors—“I really didn't think I had a ‘problem’ until I tried them!” Seriously, after taking a dose of one of these three medications, you might just find that a breeze blowing on you can be a rather stimulating experience!

Bladder relaxants

These medications are useful to help manage overactive bladder, a condition associated with the aging process that causes annoying urinary symptoms (urgency, frequency, incontinence) that can significantly interfere with one's quality of life. These medications include the following: Tolterodine (Detrol LA), Oxybutynin (Ditropan XL and Oxytrol Patch), Trospium (Sanctura), Solifenacin (Vesicare) and Darifenacin (Enablex). These medications can help reverse time in terms of improving urinary function and allowing many women and men to resume the youthful

bladder function that they had prior to the onset of the overactive bladder condition.

Prostate relaxants

Also known as alpha blockers, these prostate relaxants include the following: Terazosin (Hytrin), Doxazosin (Cardura), Tamsulosin (Flomax), and Alfuzosin (Uroxatral). This class of medication relaxes prostate and urethral smooth muscle, alleviating symptoms of urinary obstruction by decreasing the muscle tone of the prostate. These medications are effective in treating the symptoms of prostate enlargement, a condition strongly correlated with the male aging process. These irksome symptoms can include a hesitant, slow and weak urinary stream, prolonged emptying time, urgency, frequency, and nocturnal urination causing sleep interruption. To quote a patient of mine, *“I urinate in chapters”*. Although they won’t make men younger, they will help restore youthful urinary function that will allow men to have less sleep interruptions, less frequent visits to the bathroom and spend less time in the bathroom.

Chapter Ten

FINDING YOUR OWN FOUNTAIN OF YOUTH

Aging is, of course, a 100% fatal proposition, and the best recommendation to push the limit of it is to *first do no harm* by avoiding malignant behaviors. So the first general rule is active **omission**—avoid *doing bad*—do not eat excessively, stay away from harmful substances such as fast food, tobacco and drugs, be moderate when it comes to such things as alcohol and ultra-violet light exposure, minimize stress, etc. The second recommendation to push the limit of aging is active **commission**—*do good*—eat properly, exercise vigorously, get enough sleep, seek preventative maintenance, respect yourself, invest in yourself, engage in the *fitness and health lifestyle*, live well!

To review the specific keys to aging well as delineated by the youthful elderly population:

- ✓ Maintain an active, purposeful, and meaningful existence—for many this means continuing to work in some capacity or involvement in other endeavors that create purpose—this allows one to structure their time effectively and maintain a sense of community
- ✓ Make a long-term commitment to ample exercise and physical activity
- ✓ Stay mentally engaged and passionate about interests and hobbies including reading, travel, games, art, music, crafts, pets, etc.
- ✓ Fuel yourself with the healthiest diet possible
- ✓ Avoid self-abusive behavior—junk food, obesity, tobacco, excessive alcohol, excessive sun exposure, undue risks—maintain an “everything in moderation” attitude
- ✓ Maintain close relationships with family and friends—put great effort into your marriage or primary relationship as it is a vitally important attribute of aging well

- ✓ Have an optimistic and grateful attitude—a cheery, happy and upbeat disposition with a sense of hope about what the future will bring and a good sense of humor and deal positively with stress
- ✓ Counter life’s inevitable losses, changes, and vicissitudes with adaptation
- ✓ Practice preventative maintenance and avail yourself of all the advances medicine has to offer
- ✓ Care about yourself, respect yourself and invest in yourself—live well

Although a true “fountain of youth” to reverse the effects of aging does not exist, I contend that by following the aforementioned guidelines you will be provided with the closest thing to a “magic bullet” that humans have to mitigate the insidious process of aging. Aging is an inevitable occurrence, but *how* you age is within your control to a significant extent. You have it within your own power to maintain health, vitality, and quality longevity—to walk with a spring in your step and to feel energized and content—and to prove that you are not old, but classic!