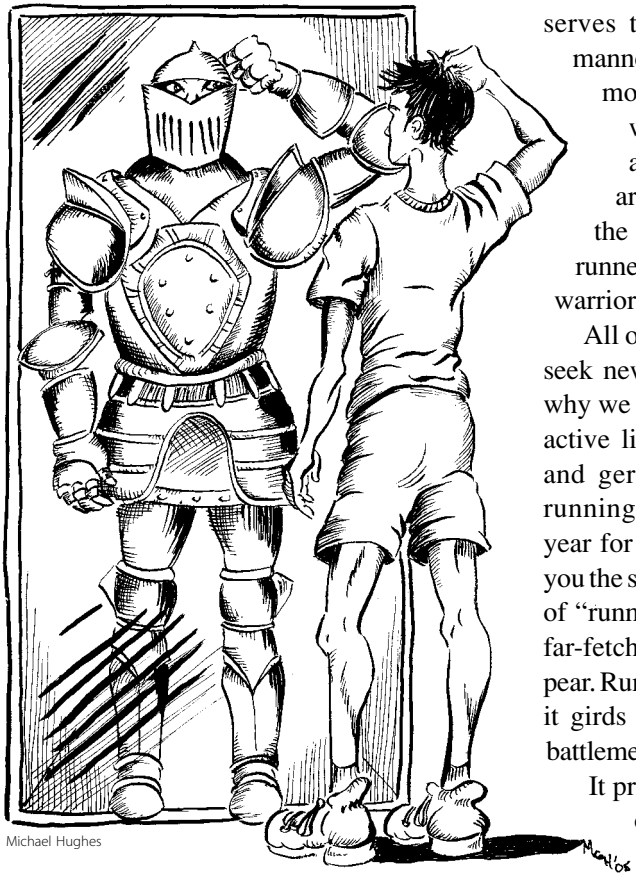
Running As Armor

A Fit Lifestyle Serves to Modulate the Aging Process.

BY DR. WALTER BORTZ II

Among all those self-images you have developed over your years on the roads and trails, I am sure that you have never once identified yourself as enclosed in a sturdy suit of armor. Not once have you seen yourself cresting a rise or on a long straightaway wearing an impregnable coat of boilerplate with helmet and visor securely fixed. You have never seen yourself in this costume, but the image is not fantasy, it is real. You, the runner, put in your miles within an invisible protective casing that serves to shield you from all manner of life's assaults. You move in your own fortress with secure defenses on all sides. Life's slings and arrows fall harmlessly. At the end of the day you, the runner, are likely to be the last warrior standing.



Michael Hughes

All of us running enthusiasts seek new metaphors to explain why we are so committed to our active lifestyle. As a physician and geriatrician proud of my running habit—a marathon a year for 35 years—I propose to you the suggestion that the image of "running as armor" is not so far-fetched as it might at first appear. Running builds your mettle; it girds your whole being in a battlement that displays your grit. It provides protective layers of the right stuff.

Two years ago, an old 50-foot oak limb in our yard broke off. A neighbor alerted me to this event. There it was on its new perch jammed among lower branches 15 feet off the ground. Firewood!

THE TREE FIGHTS BACK

I enthusiastically began pruning reachable lower shoots. Deeply immersed in my creative effort, above I heard a tremendous crunching groan and this oak girder somehow dislodged from what I had presumed was its secure wedge.

I was immediately engulfed in leafy branches, dust, noise, and pain. I crouched reflexively, a thud hit beneath my right shoulder blade, and I knew immediately that I had busted ribs and punctured a lung as breathing came hard.

My emergency supply of endorphins kicked in. I did let out some unholy bellows, ugly shouts like a stricken cow. My wife ran from the house and retrieved her wounded husband. Within minutes the paramedics were there, IV morphine was started, and I was whisked to the Stanford Hospital ER, where clusters of anxious friends materialized immediately.

An X-ray confirmed my internist-generated diagnosis of broken ribs (four) and a pneumothorax. Part of the experience of being a patient in a teaching hospital is the likely encounter with a fourth-year medical student—I was one 50 years ago—who, with gentle instruction, clumsily learns how to insert a plastic tube into a person's chest (mine), thereby providing a means to apply suction to reexpand my lung from its collapsed state.

The tumult gradually subsided, and a review of the prior events revealed that I was terribly lucky not to have been killed by a direct hit—or worse, paralyzed by its hitting neared my spinal cord. All I had were some busted ribs and a lung that was already back to functioning. A deep breath or a cough or a laugh hurt as I felt the edges of the ribs grinding against each other.

I was reminded of the remark "If it had been a mule, it would have killed it." I was out of the hospital in 14 hours, attended an important meeting at 4 o'clock, and flew to Phoenix three days later. Sure, I was taking Vicodin and couldn't turn over in bed without a wince, but life went on with scarcely a bump. I had bent and a small part of me had broken, but I had not buckled or crumbled. I was not knocked off my feet. I had withstood the insult.

As a committed long-distance runner, I credit much of my resistance to hurt to my fitness habit. I preached exercise to my patients for over 40 years and honestly feel that being in good physical shape represents far more benefit against life's insults than corps of doctors and pharmacists. I have preached exercise to thousands of people over the years and am convinced that every mile traveled on foot provides a whole apothecary's worth of preventive medicine.

LESSONS LEARNED LIVING LONG

My medical career has been spent as a geriatrician, an internist with a particular interest in the health conditions confronted by older persons. This wonderful experience has provided life lessons of immense value. It has also provided professional exposure to colleagues: George Sheehan, ■ Spangler, Ken Cooper, among those who share my commitment to preaching exercise. They have taught me a lot about the science and art of growing old with vitality and dignity.

One of the precious lessons I have learned is that the older we become, the more important fitness becomes to life's quality and quantity. Exercise for a young person is an option. Exercise for an older person is imperative. The important work of Steve Blair of The Cooper Institute in Dallas shows this. Early in life, health threats are largely events that are externally generated: accidents and infections most notably. Fitness is a minor player in their expression. As we age, illness becomes more and more chronic in nature. This is a result of personal decisions made and not made. Behavior is repeatedly incriminated as the dominant determinant of health of older people.

And lack of exercise appears front and center as the behavioral fact of life that threatens health as we age. An inventory of the commonest medical encounters faced by people in the last third of life reveals the vulnerability of unfit people and the relative security enjoyed by fit ones.

CARDIOVASCULAR DISEASE

Heart disease is still the dominant cause of death in the United States and Western worlds, and it is becoming the leading killer in the developing world as well as it seeks to be like us. Heart disease isn't really so much heart disease as it is artery disease. When one or more of the slender tubes becomes clogged with clot or cholesterol, the heart screams for oxygen, and the muscle is damaged. Survival depends on how much of the pumping capacity has been lost.

Ten years ago, Bill Haskell and other Stanford cardiology colleagues and I performed coronary arteriograms on 12 Western States 100-Mile Endurance Run friends. I was in the cath lab during the first one, and when the dye was injected I thought we had killed our friend; his artery was huge! As were the others. We reported these results in the journal *Circulation* with the title "Coronary Artery Size in Ultra-Marathon Runners." Who cares what your cholesterol is if your artery is an inch across? Not only do running and exercise enlarge the size of the crucial coronary arteries, but a group at Yale Medical School has shown, predictably, that the peripheral arteries to the legs are also increased in diameter by a running pattern. The arterial size increases are only the top of a long list of cardiac benefits including modulation of the blood pressure, improvement of cholesterol

profile, strengthening of heart-pumping capacity, less clottability of blood, and others. Running is a sturdy barrier against heart disease.

MUSCULOSKELETAL FRAGILITY

Strong bones and muscles, the inevitable and predictable result of a running program, protect the body against some of the most common debilities of old age—muscular frailty and osteoporosis.

On a mass basis alone, most of the body is dedicated to movement purposes. Not surprisingly, when these tissues are underused, their robustness decreases and major problems lie certainly ahead. It is said that disuse, such as bed rest, can cause muscle strength to go down as rapidly as 1 percent per day. Similarly, astronauts exposed to weightlessness lose their bone calcium content so dangerously that even extended exercise while in space has not been able to eliminate it.

The epidemic of hip fractures in our country is a vivid example of the vulnerability of the musculoskeletal system that accompanies the lack of exercise. An old German pathologist, Julius Wolff, proposed a law that still bears his name: "The robusticity of any bone varies in direct proportion to the physical forces applied to that bone." It is a strong example of "use it or lose it" in bold display.

Running is a sturdy insulation against muscle and bone decay.

METABOLIC INSTABILITY

The world is rapidly being overrun with a major epidemic of type II diabetes. Estimates project numbers in the hundreds of millions of cases in the very near future. My new book, *Diabetes Danger*, sounds the alarm.

This disease, which leads frequently to blindness, kidney failure, and strokes, is very poorly managed by traditional medical treatments, but it is largely preventable by the simple expedient of adequate physical exercise. Obesity, which is the frequent forerunner of this major condition, is a by-product of dietary excess and physical inactivity. The Pima Indians have virtually no diabetes in their Northern Mexico homeland, but as they move to Phoenix, they abruptly display one of the highest incidences of diabetes in the world. This story is repeated over and over when native populations move into the big city and start to ride instead of walking and running.

Very few runners develop type II diabetes. It is as though running constitutes a vaccine, an armor against it, one which is cheap, safe, and almost universally available.

IMMUNOLOGIC SUSCEPTIBILITY

More and more research evidence appears that demonstrates the protective effect that a running habit conveys against infections and other immunologic assaults.

Virtually all of the biochemical sentinels that stand guard against infection, bacterial and viral, and toxins are upgraded by a conditioning program. It must immediately be noted that this protection can be pierced by overdoing it. Olympians, pushing themselves to the supreme effort, are often sick as their defense systems are overstretched.

However, during periods of regular training, the body builds up various lines of effective defenses against invading agents.

DEPRESSION

The central nervous system is our master control panel, and its workings must be at maximum efficiency if we are to maneuver the minefield of life's mishaps. A friend, psychologist Keith Johnsgard, wrote, "No depression is so severe as to be able to withstand a 10K run." The blues and running don't mix. Many psychiatrists prescribe exercise for their depressed patients.

The biomechanical reason for this lies in the fact that the important body messengers, the catecholamines adrenaline and noradrenaline, are released during exercise, as they wonderfully serve to modulate the widespread adaptive functions that exercise provokes. It is no accident therefore that many of the commonly used antidepressants are closely related to the catecholamines. Giving them to a depressed person is similar to giving insulin to a person with diabetes due to lack of insulin. One of my mandatory strategies when treating a depressed person is exercise first; then if it fails, pills—not the reverse.

The runner is equipped with other protections against demons that hurt the beleaguered brain, such as anxiety and insomnia. It is hard to sweat the small stuff, and the big stuff, when you are equipped with the broad perspectives that fitness confirms. The French phrase "sang-froid" (cold blood) portrays the sense of detached indifference that runners bring to life's inconsequentialities. Similarly, Dr. Bill Dement, a sleep expert, advises a regular program as a good plan to start to establish a secure sleep habit. A good run beats every sleeping pill I know of.

PREMATURE AGING

Some sage observed, "I have always heard that everyone has to grow old someday, but I have been hoping that there may be an exception made in my case."

Despite lives and fortunes having been spent in its pursuit, no one has yet found out how to halt the fall of the grains of sand in the hourglass. This powerful reality goes by the name of the Second Law of Thermodynamics. Everything ages.

But, and this is the big but, all of us have within us the ability to slow the rate of the fall of the sand, simply by narrowing the aperture of the hourglass by adopting a running habit.

Forty years ago, Dr. Herb DeVries, of the University of Southern California, trained a group of middle-aged persons and found a 30-year gain in $\dot{V}O_2$max, which is widely acknowledged as being the best single biomarker of the aging process. Later, Drs. Kasch and Boyer found that runners age at the stately rate of 0.5 percent per year, whereas unfit controls age at 2 percent per year—four times as fast.

Perhaps the most dreaded aspect of growing older is the prospect of dependency, having to rely on someone else to wipe one's nose or bottom or write one's checks. Protect us from this fate! Jack Guralnik, of the National Institutes on Aging, has shown that leg strength is the single best indicator of future need for a nursing home—not age, not disease state, not medication use, but leg strength. This observation prompts my conclusion that the single most important organ in an older person's body is not the heart, or lungs, or kidneys, but the legs. If my sturdy legs had crumpled under the tree limb, I would have been crushed; instead, the blow bounced off instead of sending me to the ground. I am sure my fitness state was a major determinant of my satisfactory encounter with this unexpected crunch.

The largest demon confronting and confounding old age is Alzheimer's disease. We must get rid of it, as it haunts all of us. As much as I would like to claim a protective effect of running against Alzheimer's disease, I am not able to do so, although I am confident that all other decrements associated with aging are well addressed by a running way of life.

RUNNING AS ARMOR

Your suit of armor may be invisible to you, but it is there nonetheless. Better yet, you have woven it yourself, so it fits you. You don't want it too tight or too loose, which is just about as good a definition of the ideal state as I can imagine. The suit might get a dent in it every so often as the result of an unforeseen event, like a tree limb, but your body has its marvelous way of absorbing most bumps and repairing them if they do get through.

If you overtrain and your suit constricts, various susceptibilities appear, ranging from plantar fasciitis to menstrual irregularity to increased susceptibility to colds. You don't want your armor to be too tight, but you don't want it to be too loose, either. You don't want your defenses to be leaky. My guess is that most of us err on the side of armor being too loose rather than too tight. For every person who is overtrained, there are thousands who could and should do more.

If all of us kept our suit of armor in top shape, life would be a whole lot happier, cheaper, healthier, and longer.