

THE METABOLIC PLAN

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CHAPTER

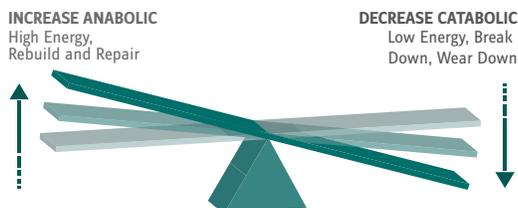
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Metabolism: the process of anabolic repair and catabolic damage within the body.

FOUNDATIONS

I began my quest for longevity at the age of 19. Pretty young to be thinking about making the second half of my life better, but a university biology lesson had triggered what would become a lifelong vocation for me. The professor had informed us that we would live a certain number of years, lose our youth at around 30, age predictably and die. We would have a prime of about one decade, from 20 to 30. This was unacceptable, and I decided to find out if it was true.

I soon found out that metabolism controls aging, life, and death. Aging and death occur because of a metabolic shift from an anabolic stage – high-energy, rebuild, and repair – to a catabolic stage – low-energy, break down, and wear down. There is a balance of these two forces at about age 30, and my research and clinical experience have shown that the idea, then, is to maintain anabolic metabolism at about the 30-year-old level.



HERE'S HOW: As wonderful as science is, you are the miracle. No matter how well designed and executed, science can never come close to the astounding capabilities of the human body and mind. Your body produces 300 billion new cells every single day. But remember, anti-aging is not simply decreasing your risk for the diseases associated with aging. It is the alteration of the fundamental cause of aging – progressive degeneration.

And the only strategy that will enable you to slow the aging process is one that shifts your metabolism back to a more youthful anabolic state. This means that when you replace those 300 billion cells every single day, if those cells are stronger and healthier than the cells they replace, you will, in a very real sense, grow biologically younger. But this isn't a one-time fix. You must do this consistently, day after day.

It's also important to distinguish between healthy living and anti-aging. If a person eats a well-balanced diet, exercises regularly, doesn't smoke, and drinks moderately, is he practicing anti-aging? The short answer is no. This is extremely valuable, but it's not anti-aging.

Anti-aging is the alteration of the fundamental cause of aging, which is progressive degeneration. In fact, the cascade of degeneration affects the entire body and brain, but it is amazing how blind we are to the metabolic answer. Solid research has shown that restoring and maintaining muscle mass is one of the most important factors determining quality of life and longevity. High muscle mass sends longevity signals to the brain.

What else can you do? Maintain your immune system. Falling levels of DHEA and other anabolic hormones are responsible for much of the catabolic downward spiral. Restoring anabolic drive has profound effects on the immune system. And, restoring DHEA levels appears to provide a tune-up for the adrenals and may have a ripple effect of benefits. It's important to reiterate: the idea is not simply to postpone death. We all know people as young as forty who are walking and breathing but aren't truly enjoying life. I'm talking about the ability to live an ecstatic life, and to do that you must maintain high-energy anabolic metabolism.

Old paradigm: Aging is an inexorable process of degeneration.

New paradigm: Aging is a dynamic process over which we have considerable control.

Old paradigm: The body wears out like our other possessions.

New paradigm: The body has astounding powers of regeneration. We produce billions of new cells every day.

Old paradigm: A life expectancy of 76.7 years.

New paradigm: Life potential of 120 years or more.

RESTORING YOUR ANABOLIC POWER

You live in a miraculous body, and as with home improvement, you can do a great job or a lousy job, depending on three anabolic factors: raw materials, energy, and hormone signals.

RAW MATERIALS

The right raw materials are vitally important. Depleted soil produces deficient plants; combined with poor food choices, cooking, and selective breeding, many of the nutrients critical for anabolic repair are simply unavailable to most Americans. You can overcome this obstacle by incorporating what I call longevity foods into your diet. Chapter Eight goes into nutrition in detail, but one food that deserves attention here is protein. Proteins are fundamental components of all living cells and include enzymes, hormones, and antibodies, all substances necessary for the proper functioning of an organism. Two of the most prolific repair proteins produced by the body are glucosamine and chondroitin, responsible for the structural integrity and flexibility of joints, tendons and ligaments.

And when it comes to protein, the liver is a magician. This organ performs an enormous range of tasks. Among more than sixty different metabolic functions, the liver is in charge of collecting and distributing nearly every nutrient from every bit of food you will ever eat. So if you want to live a long and healthy life, you must maintain optimal liver function, and Chapter Three addresses this in depth.

ENERGY

Age-related fatigue, or put another way – lack of energy, has been a mystery that is now being unraveled. An important study at the University of California, Berkeley, showed that increasing cellular energy production appears to improve everything. But how to increase this cellular energy? Two nutrients seem to be key: acetyl-L-carnitine, which boosts the activity of a mitochondrial enzyme critical for energy production, and alpha lipoic acid, a powerful antioxidant that protects cells from the by-products of oxidation. Anti-aging specialists recom-

mend a daily intake of 200 to 500 milligrams of acetyl-L-carnitine and 100 to 500 milligrams of lipoic acid.

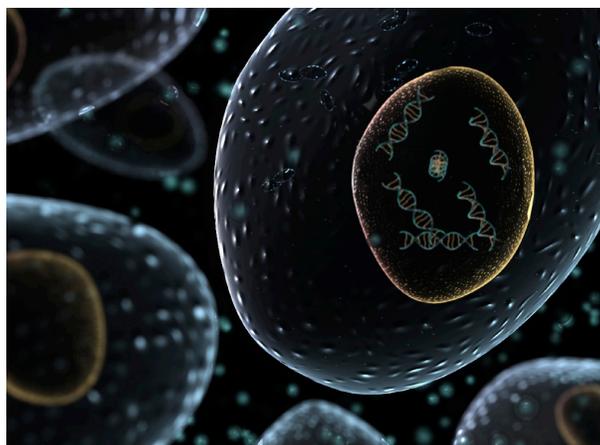
HORMONE SIGNALS

What do you need for successful anabolic metabolism? You need a signal telling your body what to do with the raw materials, and this signal comes from hormones. In youth, DHEA, estrogen, testosterone, and progesterone produce a loud and clear message that says “rebuild, restore, repair.” Middle age begins to whisper this mantra and by old age it’s pretty much “why bother?” Well, I was in the “middle age” category and not liking what I saw in the mirror. Fortunately, I was sent a flyer announcing a conference on DHEA, and I was intrigued by the range of data to be presented, particularly by one abstract from a human study that stated:

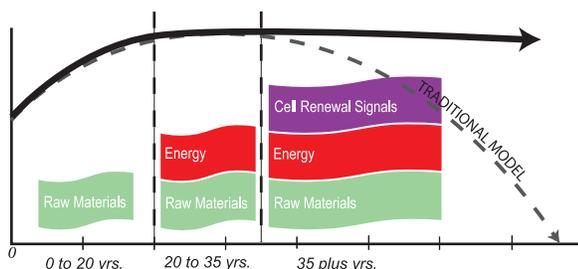
“In normal men DHEA administration reduces body fat, increases muscle mass, and reduces serum low density lipoprotein cholesterol levels.”

I liked this, but—was DHEA safe? I decided to become a biochemical guinea pig along with a number of other biochemists around the world, and began taking 50 milligrams daily as an experimental dose. I recorded blood chemistry, body composition, and hormone levels with other biochemists. After eight years, each of us noticed a decrease in body fat, better skin tone, visible results with strength training, and reduction in cholesterol and blood pressure. For me, the matter was pretty much closed. DHEA was the anabolic key.

Restoring DHEA is like amplifying the body’s most powerful longevity signal, and it can be done safely at any age. This alone will not make you younger; but it is, for most people, a critical step to restoring youthful anabolic metabolism. If you do nothing, the brain is programmed to initiate the shutdown sequence at about age forty. Isn’t it good to know that you can do something?



BUILDING BLOCKS FOR HEALTHY AGING



The goal is to keep your lifeline strong and stable even as you move into Phase 3 of your cycle. You want to prevent a traditional aging path, (dotted line) when the lifeline heads down in Phase 2 and plummets in Phase 3.

PUTTING THE BRAKES ON CATABOLIC METABOLISM

CHAPTER

3

Biochemically, the body is simply not equipped for the intake of pure glucose, and although it will adapt and function, the liver, adrenals, and pancreas will be strained in the process. All of this accelerates aging.

Here's how a physiology professor summed up human metabolism: "The day that your total catabolic activity exceeds your anabolic activity is the day you begin to die." But an action plan is available once you understand that 90 percent of catabolic damage stems from four basic factors.

OXIDATION

When oxygen combines with - and alters - substances, it's called oxidation. Free radicals are atoms or molecules that contain an unpaired electron...imbalance causes them to be unstable - so they need to steal an electron from an atom - this causes a chain reaction that results in cell death and tissue damage. And, free radicals are one of the main causes of aging and death - so it's a good thing to really understand what they are.

Free radicals cause or contribute to most diseases including cardiovascular disease and cancer. Following are common sources of free radical damage:

- ✓ Cigarette smoking
- ✓ Barbecuing and charring foods
- ✓ Carbohydrates prepared with high heat
- ✓ Chemical exposure

So, what can you do?

The average American consumes fewer than ten species of plants, most of which are antioxidant-poor. So, eat lots of different fresh fruits and vegetables and supplement with a variety of antioxidants found in juices and green drinks processed at low temperatures. Worth noting, DHEA possesses significant antioxidant activity, and may be a powerful antioxidant stimulator.

GLYCATION

Glycation is the scientific term for what food chemists and bakers call browning, and this happens when sugars combine with proteins. This browning happens to us as we age. A major portion of every metabolic process in the human body depends on the perfect timing of more than fifty thousand proteins. *Proteins turn genes off and on, ferry nutrients and other essential biochemicals throughout the body, help balance blood chemistry, play an integral role in the immune system, and direct the entire process of cell repair and replication.*

In 1992, scientists discovered that lipoic acid could arrest the glycation process in a test tube. When they added lipoic acid, they found that glutathione and vitamin C were completely restored, and this restoration put the brakes on the destructive effects of glycation. Further, research has confirmed that flavonoids significantly reduce the glycation of hemoglobin.

Another thing to consider: biochemically sugar is a disaster, primarily because it raises glucose levels so fast and so high that the body responds by secreting insulin, the hormone responsible for taking glucose out of the bloodstream and into the cell. This produces a rollercoaster of energy followed by profound fatigue.

Biochemically, the body is simply not equipped for the intake of pure glucose, and although it will adapt and function, the liver, adrenals, and pancreas will be strained in the process. All of this accelerates aging.

And, this is scary: Today, the average American consumes about 24 teaspoons of refined sugar per day, amounting to well over one hundred pounds of sugar per person each year...anyone serious about anti-aging cannot consume 24 teaspoons of sugar every day and hope to succeed. As always, exercise helps because, like it or not, you were made to move!

WEAR AND TEAR

Collagen is a protein that holds you together, forms the foundation of your skin and arteries, and keeps organs in place. After water, collagen is the major constituent of your body. We now know that collagen is replaced, very slowly, so protecting collagen becomes a top anti-aging priority. Since collagen is a protein, it's a primary target for oxidation damage, so

- ✓ Maintain adequate antioxidant protection
- ✓ Avoid refined sugars
- ✓ Get regular exercise

Aloe vera produces anabolic and anti-catabolic benefits for immunity, healthy cell proliferation, collagen production, detoxification, antioxidant activity and intestinal health.

DECLINING LIVER FUNCTION

Aging is associated with declining liver function, so a catabolic spiral results. If the liver is impaired, anabolic activity declines. To restore and maintain liver function:

- ✓ Consume alcohol in moderation
- ✓ Avoid hepatitis like the plague

IN CONCLUSION:

Good news? We now know that reducing catabolic damage and restoring youthful anabolic repair can dramatically improve the way we age.

Bad news? One thing that can dash our hopes for a long, healthy and vibrant life is STRESS - stay tuned for Chapter Four.

STRESS AND THE AGING PROCESS

Stress is a catabolic turbocharger. Indeed, it is the invisible saboteur. It silently weakens your immune system, accelerates aging, and can in a very real sense take you out of the game. We know that stress interferes with deep sleep and sets us up for a vicious cycle of fatigue, illness, and more stress.

Major Effects of Stress Hormones:

fight-or-flight response

- ✓ Pupils dilate
- ✓ Heart rate and blood pressure increase
- ✓ Blood flow is diverted to critical areas
- ✓ Liver releases glucose and fatty acids
- ✓ Bronchial tubes dilate

Once upon a time, you were fine until you were threatened—then you were fine again. Now, stress is chronic, and the same adrenal response is killing us. The effects of chronic stress include: blood pressure rises, gastrointestinal disorders, increased insulin production from unused glucose, clogged arteries from unused fat, and exhausted adrenals. Stress response causes adrenals to decrease production of DHEA.

SO, HOW TO RESPOND TO STRESS?

Stress management confers direct, powerful, and measurable benefits in a fairly short period of time. You needn't eliminate stress – transform it! Turn it in to something positive: maximize creativity, love, and joy. Remember, change is what pulls us from our comfort zone, so become resilient.

GET OFF THE BEAN!

If you can quit or cut down on caffeine, do so. And no matter what method you use to decrease caffeine intake, you will need to make a concerted effort to drink more water.

Make sure always to have a container of water handy and

drink small amounts throughout the day. And, remember, you may benefit from some nutritional support to overcome adrenal exhaustion:

I recommend that everyone quitting coffee begin taking Ginkgo biloba, 24% standardized concentrate, in dosages of 50-100 milligrams daily during the first two weeks of withdrawal.

Gotu kola can help rebuild mental stamina, increase mental ability, and improve memory and learning retention. The herb has been used in India for centuries, where it is reputed to be a “rejuvenator.”

Look for high-potency, sugar-free berry concentrates. I've found that one or two ounces can dramatically improve mental clarity, especially when the midafternoon “fog” rolls in.

Here's how the world sets one up for a deep level of stress: Sorry, but the universe is simply not designed to provide us with everything we want. In fact, often – you don't get what you want, and you get what you don't want. Thus, if you expect all joy and no sorrow in life, you'll be very stressed – this condition saps our energy and creates a great deal of unhappiness.

The importance of deep and restful sleep along with regular exercise cannot be overstated. And, finally, figure out what you really want, because everyone's core desire is to be happy; but remember, happiness is not something you can get or manipulate or buy at any price.

Life is not about avoiding stress at all costs. It is not about fleeing from anything that might make you sad in order to maintain the impossible illusion of constant happiness. Serenity is not found from hiding in a cave, but in meeting the challenges of life in creative and effective ways.

If a microbe is in or around us all the time and yet causes no disease until we are exposed to stress, what is the cause of the illness, the microbe or the stress?

*Dr. Hans Selye,
The Stress of Life*

DHEA has recently been shown to have physiological properties...which are associated with such psychophysiological phenomena as memory, stress, anxiety, sleep, and depression. Therefore, the deficiency of DHEA might be related to the neuropsychiatric symptoms in patients with chronic fatigue syndrome.

H. Kuratsune et al., International Journal of Molecular Medicine.

HOW GOOD DO YOU WANT TO LOOK & FEEL?

CHAPTER

5

Chronological age is now irrelevant. Sure, we're born with a "genetic package." But it's not as significant as you might think – eye and hair color, male-pattern baldness, and some diseases are purely genetic. But you do have control over your appearance. Collagen and cosmetic repair jobs are not only temporary and expensive, they are only necessary as your metabolism becomes more catabolic. And, none deals with the underlying cause of wrinkles, lines, and sagging jawlines. We're told that the human body is comprised of 70% water, but that's true only if you are highly anabolic. Most adults are perpetually dehydrated!

The biology of your skin involves water at every level.

I think we all know by now how damaging the sun is to our skin, so limit your sun exposure. And again, the right raw materials are vitally important in keeping your skin healthy. Include essential fats in your diet – found in veggies, grains, nuts, beans, and fish. Stay away from nonessential animal fat.

Speaking of diets, simply put they don't work, and here's why: when caloric intake is reduced (i.e., dieting) your genes think that something's wrong, maybe even death by starvation. So your body responds something like this:

"Emergency. Dramatic reduction in food intake. Lower metabolic rate to survival mode, decrease all unnecessary metabolic functions, store every gram of food as fat. This is an emergency! Lower metabolic rate...."

So your body decreases its metabolic rate (calorie burning) and, the body cranks out lipoprotein lipase, an enzyme that increases the conversion of food to fat. As a result, when dieters go back to normal eating, they are primed to gain an enormous amount of weight. Bottom line? Don't think of weight loss, think of fat loss.

The term "weight loss" should be banned, because anytime you lose muscle, you have harmed yourself. You've lost highly anabolic tissue that's essential for maintaining ideal weight.

ENERGY

Here we go again. Energy is a ticket to life as a participant. Open a glossy magazine and you see gorgeous people doing what? MOVING. You can do this! Restoring anabolic metabolism enables you to restore flexibility to connective tissue, and increased muscle creates metabolic armor.

Anabolic metabolism builds immunity, enhances the barrier mechanism of the skin and mucous membranes, improves organ function, and basically makes your body very inhospitable to microbes...

THINK YOUNG

Here's the thing: You can do something about how you think. You have a choice.

Affirm that life expectancy is irrelevant. A great deal of the aging process is under your control.

Become aware of time spent stewing and fretting. Focus on immediate, good things.

Mindfulness is the practice of being present. When you eat, when you shower, whatever you do, be in the present.

Tools for the Journey – Yoga and meditation can lower blood pressure, relieve anxiety, enhance overall health, accelerate weight loss, and improve sleep.

Community builds immunity. Individuals who enjoy a deep sense of community – religious, ethnic, or merely geographic – have decreased risk for heart disease and cancer.

THINK LONG.

We've discussed the biomarkers of aging – muscle mass, hormone levels, and immune strength. There are equally valid psychomarkers to describe our mind-set regarding time and aging. In primitive societies, the view of aging is often positive whereas ours is inherently negative. Keep in mind, you not only want to live long but you also want to maintain optimal brain function. Unlike muscles, which can use glucose, fat, and even protein (in a pinch) for fuel, the brain can only use glucose. This makes it highly vulnerable to glycation. What can you do? Remember the research I mentioned regarding berries? Health experts have recommended eating one to two cups of berries a day. They contain flavonoids, and we're learning that flavonoids enhance the integrity of the blood-brain barrier – critically important for brain health.

Exercising your muscles exercises your brain. Again, get moving! Turn off the television and tune into a crossword puzzle, listen to music, learn a language – use your brain.

Remember, the entire Metabolic Plan is geared toward getting you passionately and intensely involved with life. If you want your life to be active and vibrant, you must take action now. Don't wait another twenty years, hoping for a miracle drug. It's time to wake up and start using the incredible resources we have available right now.

"Every biochemical reaction, from the synthesis of collagen to the healing of microscopic wounds to the generation of new cells and the tone, strength, and appearance of every square inch of your skin depends entirely on the availability of adequate water."

ILLNESS, IMMUNITY AND METABOLISM

So far, we've been looking at the forces of anabolic repair and catabolic damage. There's a third force that can take you out of the game at any time, and that's disease. However, nature created illness for a reason, and you'll never understand this if you view it as something to flee from, cover up, or suppress. Illness is also critical for longevity. Now we're not talking about disease. Disease is cancer, stroke, tuberculosis, kidney and heart disease, and so on. Illness is a cold, stuffy nose, sore throat, ear ache, and a virus. Illness is a signal to slow down, get more rest, and rebuild your immune system with pure water, good food, and nutritional support. Disease is what you get when your immune system has not been trained and strengthened.

There are powerful and effective steps you can take to build and maintain peak immunity. As you might guess, metabolism is the factor that makes good food, regular exercise, and vitamin supplements really effective. In most people, the immune system starts to go "out of whack" as early as age forty. I have what I call "The Metabolic Peak Immunity Plan" with three stages of nutritional supplements, too detailed to list here. (See pages 153- 155 of the book) Additionally, you can do the following:

EXERCISE

Scientists have long observed that people who exercise regularly live longer. Cardiovascular fitness leads to better circulation, stronger bones, and greater delivery of oxygen.

RANGE-OF-MOTION

You have more lymphatic fluid in your body than blood. Lymph bathes every cell, playing an important role in immunity and detoxification. To circulate blood, you have a fantastic pump in your chest. Your lymphatic system has no pump; how does it circulate? It circulates through movement that entails muscles and joints going through their full range of motion. Yoga, dancing, rock climbing, bouncing on a tramp, Tai Chi, and martial arts are all great.

THE IRON FACTOR

Both a deficiency and an excess of iron can accelerate aging. It is well known that iron deficiency anemia impairs immunity and anabolic repair, so it's very important to monitor your iron level. This can be done with a serum ferritin test during your yearly checkup.

LEAD AND MERCURY

Lead and mercury are highly toxic metals that can profoundly suppress immunity. Calcium supplements can be contaminated with lead, and since millions of Americans

are supplementing with large doses of calcium, make sure that you request a certified heavy-metal assay from your nutritional supplement manufacturer. Keep your hands – and your kids' hands – off car keys. Keys contain lead. If you are worried about high levels of lead and mercury in your system, a physician can screen your hair, urine and blood for these elements.

INFECTION

No discussion of aging and immunity is complete without looking at how we tend to accumulate resident or chronic infections along the way. HIV, herpes, periodontal disease, venereal parasites (yes, they exist), and parasites obtained by eating ethnic foods such as Sushi are all scary infections that you want to avoid at all costs. Take the necessary precautions when you travel, cook your food, take care of your oral hygiene, and stay monogamous.

CARDIOVASCULAR DISEASE

Cardiovascular disease, the cause of approximately one million deaths in 2001, is preventable. In fact, raising antioxidant levels in the blood is probably the single most important step you can take to prevent a stroke or heart attack. Antioxidant nutrition is only one of the facets of the Metabolic Plan that will dramatically reduce your risk of cardiovascular disease; the other important factor is restoring anabolic metabolism – and the most comprehensive anabolic influence in the human body is DHEA.

CANCER

Cancer kills more than 500,000 Americans every year, and it is arguably the most feared of all disorders. Cancer is a metabolic disorder – one in which normal growth cycles go haywire and the body is destroyed by unbridled cell proliferation. At first, this appears to be counter to the central argument of this book, which is that anti-aging is accomplished by restoring and maintaining highly anabolic metabolism. It must be underscored, however, that cancer is not caused by anabolic metabolism but by a disorder of anabolic metabolism. There is no evidence, clinical or experimental, to suggest that anabolic factors, including sensible intake of DHEA and 7-Keto, stimulate abnormal cell proliferation. In fact, the opposite is true. Maintaining optimal DHEA levels greatly enhances immunity and reduces abnormal cell growth. See "The Metabolic Anticancer Action Plan" pages 171-176.

We depend on our immune system to keep us well, and wellness to keep us happy. Remember, however, that joy, sharing, community, compassion and last but not least, laughter all have a role in our well-being. In Chapter Seven, we'll explore how these feelings can be amplified by movement and exercise

ENERGY, EXERCISE AND METABOLISM

I'd like to begin this chapter by acknowledging that exercise is difficult and often frustrating. Difficult primarily because you don't always have the energy and frustrating because you don't always see results. Please read the following sentence carefully:

If you are over forty, you can read any number of exercise books, watch all the exercise videos, and try to follow the programs—and you will not get results, you will not feel great, you will not succeed, and you will not want to try again....ever.

Sorry about the negativity, but I need to make this one point crystal clear: every program that expects you to "just do" something that scientific research proves your body can't "just do" is self-defeating. But let me assure you that getting active and regaining fitness are not only possible, they've never been easier.

When you restore youthful, anabolic metabolism, your body will want to move. You will exercise naturally because that's what people do when they have an abundant supply of energy. Now most people don't know where energy comes from; they think that the people working out at the local health club are there because they have lots of energy. In reality, they have lots of energy because they are working out.

OK, fine, you are thinking – if energy must come first, how do I get more energy?

As an adviser to members of the 1984 U.S. Olympic track and field team, I was asked to develop a formulation of natural compounds to help our athletes reach and maintain peak performance. My research focused on the specific nutritional requirements of cellular energy production – that biochemical assembly line within each cell known as the Krebs cycle. These unique and critically essential substances are known as rate-limiting bioenergetic nutrients, meaning that a shortage of any of them will reduce your ability to create energy.

VITAL BIOENERGETIC NUTRIENTS: THE SUPER SEVEN

1. Alpha ketoglutaric acid (AKG)
2. Vitamin B6
3. Coenzyme Q10
4. Chromium
5. Acetyl-L-carnitine (ACL)
6. Alpha lipoic acid
7. Potassium and magnesium aspartate

Now, you must also protect connective tissue. Bioenergetics can help you regain lost energy, and restored anabolic metabolism can greatly enhance your ability to maintain high muscle mass. Neither, however, decreases your risk

of injury. As we grow older, our joints and connective tissue become dehydrated, much the way our skin does. Scientists have found a specialized group of compounds known as proteoglycans, which strengthen and hydrate tendons, ligaments, and joints. Chondroitin and glucosamine are well-known proteoglycans that can be restored in two ways:

- 1. Exercise:** research shows that exercise stimulates the body to produce new collagen and higher levels of repair and rebuild proteoglycans.
- 2. Anticatabolic supplements for supple joints:** Chondroitin sulfate has been used as a therapeutic nutrient for centuries as have glucosamine sulfate and N-acetylglucosamine. Other important components of a connective tissue support program include boron, silicon, vitamin C, vitamin D, calcium, magnesium, and manganese.

BEGINNING EXERCISE

Avoid the "weekend warrior" syndrome. If you are just beginning to exercise, follow these principles:

- ✓ Exercise should be moderate.
- ✓ Consistency is more important than intensity.

NEXT LEVEL

In order to maximize the benefit of all the exercise you are now getting, you need to increase your upper-body strength. 65% of your muscles are above the waist. Because these are probably your most underdeveloped muscles, your upper body is the easiest place to build muscle mass quickly. But before you decide to really buff up, get help. A certified expert will help you set realistic goals and show you safe techniques for each exercise.

THE FINAL FRONTIER

This is maximal training and with this advanced technique, you may do just ten repetitions per exercise, but you use so much weight and move the weight so slowly that the 11th rep is impossible. Maximal training is the most efficient use of your time and energy, but you need to build up to it slowly with the supervision of a qualified fitness trainer. If you are over forty, the joint and tendon support nutrients described above are essential.

No matter what your level of exercise, stretching may be the missing link to your success. Daily stretching will make all the difference in keeping your muscles and tendons limber as they adapt to your new routine.

Remember: if you are carrying weight or have any medical condition that requires special attention, see your physician before beginning any exercise program. But do begin. With a balanced natural foods diet and renewed anabolic metabolism, you will be set to enjoy a completely new experience of vitality and health.

When you do consistent, moderate exercise, the message to your brain is this: *"This body is now an active, dynamic body that requires a great deal more energy than before, so I need to stop storing so many calories as fat and keep more in ready reserve for all this activity."*

OPTIMAL NUTRITION: BUILDING BLOCKS OF THE METABOLIC PLAN

CHAPTER

8

The Metabolic Plan – indeed, any effective anti-aging strategy– depends upon two things: supporting anabolic repair and reducing catabolic damage. Nutrition plays a key role in both of these endeavors.

The typical American diet is pretty pathetic and I'll tell you why. Follow the money. There is no whole-grain, exercise, broccoli, blueberry, or carrot lobby. But the food giants – including the meat, candy, coffee, soft drink, cereal, and dairy industries – have been influencing public policy and dominating media advertising for almost a century. As a result, we are the fattest society that has ever lived. Like mice in a cage, we tend to eat what the food giants feed us. Get out of that cage, and start thinking for yourself!

Aging is a metabolic process, and diet is a tremendous factor. Diet determines energy, blood sugar, and insulin. So, you know what I'm going to say. After all, for seven chapters, I've been asking you to think and exercise like a hunter-gatherer. I know we're not going to go out into the woods and gather berries; I suggest that we identify the characteristics of a hunting-and-gathering diet and match those with food choices that are readily available. So, what are the characteristics of a hunting-and-gathering diet?

EAT WHOLE, UNREFINED FOODS

Refining and processing food removes critically important nutrients. Virtually all essential nutrients are altered to some degree by food processing. Those that are most often depleted or destroyed include vitamins C, E, and B6, folic acid, thiamine, riboflavin, zinc, copper, magnesium, manganese, selenium, and chromium.

Conversely, research clearly shows that intake of whole grains, fresh fruits, and vegetables is associated with decreased risk for cardiovascular disease, cancer, and diabetes. Remember, variety is one of the most important principles of optimal nutrition – because whatever nourishment you don't get from one food, you can get from another.

EAT UNCOOKED FOODS OFTEN

Cooking, although extremely popular, is a very new development, and one that destroys vital nutrients – most notably antioxidants – before they make it to our mouths. That doesn't mean that you should never cook food. Cooking meat, fish, and poultry is important for food safety; cooking is also one of life's pleasures. However, it is wise to consume as much of your fruits and vegetables as possible in their raw, natural state.

EAT SMALL, FREQUENT MEALS

There are two reasons for our tendency to eat beyond hunger satisfaction, the first being that we eat too fast. It

takes about 20 minutes for your brain to get the message that the meal is satisfying your hunger. So slow down, and enjoy your food. Second, we consume far more calories than we need. One of the reasons for this is that we think we must wait several hours for the next meal because that's what our mothers told us. This is nonsense. Eating frequent, small amounts is better for you and much better for your digestive system.

THE MEAT ISSUE

As you know, domesticated meat is marbled with nonessential, artery-clogging fat. Modern meat is laced with antibiotics and hormones that are required to keep animals alive in fetid feedlot conditions. Knowing this should make it easier to eat less meat. And, sorry to burst your bubble, but chicken – in terms of overall health – is NOT safer than meat. On the contrary, contaminated chicken kills approximately one thousand people each year. What to do? Buy organically raised poultry and handle and cook it properly.

I do not advocate a totally vegetarian diet, however. The Mediterranean diet is a nice happy medium. The emphasis is on fresh vegetables, fruits, whole grains and moderate amounts of fish, chicken, and occasional red meat. Olive oil, garlic, tomatoes, and red wine are used in abundance.

As in all things, however, the key is moderation. Stick to one glass of wine per day and go easy on the pasta. And organically grown, cage-free chicken eggs are a great source of protein, about six a week is fine. Above all, remember that eating can be one of the great pleasures in life.

And how you eat is as important as what you eat. Think of your digestive system as a chemical "fire." Eating a large meal is like throwing huge logs on a small fire. The fire doesn't work, and neither does your digestive system after the kind of meal most of us eat.

Here are a few important tips for optimizing digestion and reducing your risk for bloating, gas, abdominal pain, and intestinal disease:

- ✓ Eat small amounts
- ✓ Chew your food well
- ✓ Eat slowly
- ✓ Don't chug a beverage during a meal. Room temperature water, taken in sips between bites, may enhance digestion.

Relax! Proper digestion requires a relaxed state of mind and body. Remember, to optimize the benefits of the Metabolic Plan, you need to take control of your eating habits and avail yourself of the extraordinary variety of organic natural foods that are available today.



WATER: LIFESPRING OF THE METABOLIC PLAN

CHAPTER

9

Water, The Source of Life

Drink eight to ten glasses of water every day! How many times have you heard that? Well, what if I told you that you're dehydrating as you read this page - that your body was once more than seventy percent water, and now if you're like most Americans past forty, you are lucky if you have a hydration level above sixty percent.

Turboaging

Americans consume more coffee and soft drinks than water. If you do this, you might as well post a sign on your forehead: AGING AS FAST AS I CAN. Coffee, tea, soft drinks, and alcohol are diuretics and dehydrate the body. We know that lack of water dehydrates the skin; far more serious is the dehydration of the internal organs, connective tissue, and brain.

Dehydration and Disease

Even slight dehydration can disrupt critical cell functions, and when you consider that most people experience this level of dehydration all day, nearly every day, you get a sense of the enormity of the problem.

Conditions that respond favorably to increased water intake include:

- ✓ Headache
- ✓ Muscle aches
- ✓ Hangover
- ✓ Fatigue
- ✓ Constipation
- ✓ Heartburn

Water and Weight Management

Water is essential for transporting and burning fat and for eliminating waste products that result from enhanced metabolic activity. It is vital to all your body's functions, including movement, digestion, and temperature regulation. It's important to remember that thirst is not a reliable indication of the need for water; research shows that the body can become significantly dehydrated before we actually feel thirsty.

Organized and Clustered Water

The molecules of water you drink from the faucet, bottle, or spring are arranged in random clusters. Once these molecules find their way into your cells, however, they become highly organized. In fact, water appears to exist within the cell in a complex, multi-layered structure. Water participates in all chemical reactions on multiple levels. Molecular biologist Gilbert Ling has shown that intercellular water is remarkably different from other forms of water, and one of water's most important functions

is to maintain and influence protein structure, thus the intimate connection with anabolic metabolism.

Unfortunately, as you age, the incredible "organization" that is imparted to water after it enters your body is not imparted nearly so well. Fortunately, there is something you can do about this aspect of aging. You can drink water that is already organized or clustered. The most reliable source of clustered water is fresh, raw vegetable and fruit juice. In addition to being excellent sources of vitamins and minerals, the water component of these juices has already been organized by the fruits and vegetables themselves.

Of course, it's not practical to think that we will always drink fresh vegetable and fruit juices. The easiest way to get water is from the tap. However, tap water is prone to contamination from chemicals, lead, and biological organisms. Chlorine is used to kill most of these sources of contamination; however, chlorine can react with organic material in water to produce chemical compounds called trihalomethanes- known carcinogens that have also been found to increase risk for miscarriage.

Tap vs. Bottled Water

You can treat your tap water with a variety of home water-filtration devices. Take the time to read the water reports distributed by your municipal water company, and choose a filter that addresses the concerns in your area. For the vast majority of families, three-part canister units that include a fiber filter, ceramic filter, and solid carbon core are effective and economical.

If you drink bottled water, contact your bottler for a current independent assay, or visit this site: www.nsf.org, which rates popular bottled water brands for purity. Because of its important role in body function, adequate consumption of pure water is a critical part of any anti-aging plan.

Here's my hydration action plan:

1. DO reduce or eliminate all dehydrating beverages, (coffee, tea, and colas) and don't count them as your daily water intake.
2. DO eat lots of fresh fruits and vegetables.
3. DO drink water all day long in small amounts.
4. DON'T try to "simplify" the steps into a routine of gulping down half a quart of water 3 times a day. Sip 8 to 10 cups of water throughout the day.
5. DON'T think if you don't feel thirsty you don't need water. The absence of thirst is not a reliable indicator of the need for water.



Water is essential for all anabolic repair functions, and conversely, dehydration accelerates catabolic damage.

METABOLIC ISSUES FOR WOMEN AND MEN

I could fill this page with the importance of taking care of your bones after a certain age. There is hardly a more dramatic impact on the quality of life for older women than osteoporosis and bone fractures. If you remember anything from this chapter, remember this:

“More than 28 million Americans are affected by osteoporosis, a disorder in which the bones become thin and brittle. The disease will cripple and kill more than 1.6 million people this year. More women die from the complications of osteoporosis than from cancer of the breast, cervix, and uterus combined.”

Bleak? Yes, but the good news is that osteoporosis can be prevented, and the progressive loss of bone can be arrested. There are a number of nutrients critical for bone health in addition to calcium, but what is needed is a balanced perspective that considers not only the amount – but also the source – of calcium and other important raw materials needed to build and maintain strong bones. Focus on bioavailable compounds such as calcium citrate, calcium aspartate, and calcium hydroxyapatite. In one study, intake of zinc and magnesium was shown to have a stronger influence on bone density than the intake of calcium. Boron, manganese, silicon, folic acid, and vitamins B6, D, C, and K are also important. Magnesium deserves special mention because it is in short supply in the American diet; good sources of magnesium include dark green vegetables, nuts, beans, whole grains, and seafood.

As a final note, many studies with postmenopausal women have illustrated the bone-strengthening effect of restoring DHEA. Osteoporosis is a catabolic disease, and you must deal with it in metabolic terms.

I encourage every woman to have a discussion with her physician, and make a list of issues to be discussed, and adhere to this Action Plan:

1. Get a bone scan before menopause.
2. Restore anabolic metabolism with DHEA, 7-Keto, possibly progesterone, and natural estrogens.
3. Perform regular weight-bearing exercise.
4. Eat a highly varied natural foods diet, including lowfat dairy products.
5. Supplement with a comprehensive bone and joint formula.
6. Decrease intake of “bone-busting” beverages like caffeine and sodas.
7. Eat less red meat and more vegetarian proteins.
8. Eat frequent small meals.

Now, on the surface, it looks as if men have it relatively easy. The really intriguing thing, of course, is that women on average live longer than men – 6 to 8 years

in America. Why do women have a longevity advantage? Most likely factors include:

Accumulation of iron: My advice for men is to have a serum ferritin test yearly. If this iron level is higher than 180 micrograms per liter, donate blood on a regular basis, and maintain optimum blood and tissue levels of antioxidants.

Cholesterol levels: Men need to keep a watchful eye on cholesterol level; keep it below 180 milligrams per deciliter. Remember that it's much easier to keep it low than to try to lower cholesterol once it's in the high range.

The Prostate Gland

Because the prostate issue is inextricably tied to androgenic hormones- testosterone and dihydrotestosterone- this discussion requires far more room than I have here. (see pages 246-251 of The Metabolic Plan).

The short version?

“DHEA in appropriate replacement doses appears to have remedial effects...to induce an anabolic growth factor, increase muscle strength and lean body mass, activate immune function, and enhance quality of life in aging men and women.” (Annals of the New York Academy of Sciences 774)

Important principles to remember:

1. Stay at a physiological dose with DHEA (10 to 25 mgs daily)
2. Use 7-Keto - this is not converted to testosterone and thus serves as an anabolic signal “amplifier” with a remarkable safety profile.
4. Decrease intake of nonessential fats from meat and dairy products; increase intake of essential fats from vegetables, cold-water fish, olive oil, and flaxseed oil.

Do this and then read Chapter 11, because we'll be taking a look at how to monitor your progress.

“Women who are deprived of endogenous ovarian androgens have consistently been shown to have impairment of sexual functioning, loss of energy, depression, and headaches...Androgen replacement therapy is a neglected area of medical practice and further research is needed to identify all women who will benefit from it since studies in menopausal women have shown [oral] administration to be well tolerated and safe.”

American Journal of Medicine

KEEPING SCORE, STAYING MOTIVATED, AND TAKING ACTION

CHAPTER

11

...the chronology of life is not nearly important as the biology of life...

Everyone loves a good story, especially one with a happy ending. I'm going to share a story I tell in Chapter Eleven about two people I knew in clinical practice who turned their lives around by committing to the Metabolic Plan. If you truly want this to happen to you, you will need to read Chapter Eleven in its entirety because, as I've said many times, the Metabolic Plan is not a quick fix. It is a plan for life, for a joyful, vibrant, healthy life, and it can be yours just as it is for Marissa and John.

Case Study-The Boomer Dilemma

Marissa and John were a baby boomer couple experiencing a very common dilemma. They were smart, educated, professional, and motivated people. When they came to my office, I knew at once that what they didn't need was information. "We know what to do," sighed Marissa. "It's just that all of a sudden, everything has become so difficult. Exercise used to be something I looked forward to, and now it's a chore. John has gained 20 pounds in the last few years, and he's drinking eight cups of coffee a day. He used to be a health nut!"

I explained that what had changed was their metabolism and that until something was done about it, they could not expect to look or feel much better. I turned to John and asked, "What if I told you that you had to quit coffee? Would you?" "Well, no," said John, "I've tried to do that a dozen times already." "Exactly," I replied, "but what if you suddenly found that you had more energy and mental clarity and didn't need the caffeine?" That, of course, was a different story.

To Marissa: "What if I told you that you had to increase the intensity of your exercise routine?" "Well," she replied, "I'd think that was good advice but impossible to follow. I'm already experiencing muscle and joint pain and have to resort to ibuprofen three or four times a week."

"That's because you are in the catabolic downward spiral," I explained, "but you know quite well that you don't have muscle pain because of an ibuprofen deficiency." She laughed and listened to my explanation of what would take place if she restored her anabolic repair-and-rebuild metabolism.

I was confident in my predictions because this was a woman who wanted to exercise. It just didn't feel good, and let's face it, no matter how motivated someone might be, at some point, pain or fatigue will force him or her to give up. Both Marissa and John were on the edge of that precipice.

I explained how the Metabolic Plan worked, and explained that there was a scientific way to monitor their progress. Both committed to the plan and made the necessary lifestyle changes required...Marissa started noticing better muscle tone at the two-month mark, and about the same time began to seduce John.

"It's like we're back in college," said John, and it was a good thing they embarked on the Metabolic Plan together because he was able to match her energy and excitement. John lost the twenty pounds and, more important, gained muscle at the same time. The only downside, he told me later, was that they both had to go and buy new clothes. Not only smaller sizes but different styles to fit their young, anabolic attitudes.

I want to emphasize that John and Marissa didn't experience these dramatic results by sitting on the sofa, eating doughnuts, and watching television. In addition to the anabolic-support formula, they exercised regularly, ate a highly varied natural foods diet, and supplemented with additional antioxidants.

The point is, they were doing all of this before (minus the anabolic support) but were aging "normally," sliding down the catabolic spiral. What turned them around was a shift in their metabolism.

Now, Chapter Twelve:

How old would you be if you didn't know how old you are?

METABOLIC PLAN

By now you are keenly aware that there are no magic bullets (darn), but I've tried to cut the Metabolic Plan into digestible bites. Remember, however, that the core bites are really quite simple: think, eat, and exercise like a hunter-gatherer while taking advantage of the blessings of modern biochemistry.

The question is, what will you do with this remarkable opportunity? In my presentations, I always end by asking my audience to reflect on a couple of important questions: "Why do I want to extend the prime of my life?" and "What will I do with the extra years of health and vitality?" You don't have to answer right now, but I suggest that as you get "into" anti-aging, you keep in touch with your core desires and motivations. The process of self-reflection is different for everyone and can involve anything from long walks on the beach to sitting quietly in church. Self-reflection takes time and personal space.

STAGE 1: REFLECTION

Take the time to answer these questions:

Who am I?

Don't see yourself in relation to others. Just you. What are your talents and interests? What excites you? What activities make you feel good about yourself?

Where am I going?

Take a look at which parts of your life resonate with your inner self and which parts don't....this exercise is not intended to suggest that you quit your job and move to Tahiti. It's just the beginning of looking at ways to align the person you are with your goals and taking small steps to get there.

How am I going to get there?

Small steps in the right direction are better than lofty goals with no movement. Look forward five years and develop a mission statement for the person you would like to be at that time. Try to keep it simple and on one piece of paper. Once you know where you are going, you will be amazed at how almost magically – or through apparent coincidence – you will find activities and relationships that support your direction. As with all the pieces of the Metabolic Plan, the secret to success is in small, achievable steps that are within your control.

Don't underestimate the power of recreation. Many people think of it as just "goofing off." Instead, look at the word as re-creation. Smiling, laughing, playing, and enjoying yourself are essential parts of your renewal... living life to its fullest.

Making yourself make up your mind about what you want can be the most life-changing and rejuvenating step of the Metabolic Plan that you take. Even small steps will create a sense of movement and a restoration of balance. This balance, when combined with the other steps we've outlined, can create a sense of optimism and youthful vitality that help you feel that years have virtually melted away.

STAGE 2: THE VALUE OF A REASONED RETREAT

When I speak of retreat, I'm not talking about weekend retreats to the woods, although I'm all in favor of those, too. What I'm talking about is using our hearts and minds to evaluate whether there are things in our lives that are not serving us, things that are hindering our advancement instead of helping us get where we really want to go. It can be helpful to scan our relationships, work, and habits to evaluate whether they are helping or hurting us.

Do they bring a sense of joy and peace to our lives?

I think in closing, I must acknowledge that making changes in your life is never an easy task. The key, however, is not to get caught up in the distance you have to go to get to where you want to be.

Nor should you despair over the amount of control you have over your circumstances. Progress is made in the small, intentional steps, and chances are, you have more power than you think. By focusing on the little steps that you can take every day, the progress you make will motivate you to continue your journey, and eventually, you can get to wherever you want to go.

The important thing is simply to begin!