

The Anti-Aging Report

The field of anti-aging research is bringing promise and hope to the process of aging that could have only been imagined a century ago—or even a couple of decades ago.

Studies are showing that the symptoms of aging are just like any of the other symptoms you may experience throughout life: a signal that your body is in need of something. If your body is dehydrated, it will signal you through various symptoms—the most obvious being thirst—that it needs water. If your body is depleted of vital nutrients, the deficiency will manifest itself with its own distinct set of symptoms.

Or if your system is out of balance, you feel that something isn't "right." But what has happened with the aging process—which has only recently been better understood—is that our assumptions remain even as new research uncovers a clearer picture. Conventional medicine in particular clings to the older ideas, slow to change an institutional mindset that has been in place for so long. There are many doctors who scoff at the notion of "anti-aging," as if the very idea were an outlandish pipe dream.

The emerging evidence suggests anything *but* an outlandish notion. The facts paint a different picture than the one we've become accustomed to, and it is aces beyond what's offered by the current conventional viewpoint: an outdated, grim picture of what aging looks like: frailty, falls, fractures, forgetfulness, and a never-ending cycle of prescription pills.

Our minds conjure up the image of an elderly person, hunched over, shuffling and hobbled—if they can walk at all, unable to remember things, and a lack of energy to get them through the day. Is it any wonder we dread the prospect of aging? Especially if you've watched members of your own family who struggle to get around and their days planned around a complicated regimen of pills.

The passing of years is one thing, but why do we have to feel so bad as we go?

The information you receive in this report would have been a great boon to them many years ago when their aging symptoms first appeared, were overlooked and then took a turn toward poor health.

But if you want to take advantage of the latest anti-aging research, learn how it applies to you, and how to stay on the healthiest track of aging possible, then this report will help you along the way. While you can't stop the overall process of aging, you *can* manage it. You don't have to accept the old picture of aging. Instead, anti-aging research provides the information you need so that you'll know how to feel invigorated, mentally alert, and physically stronger than ever. Using the findings of the latest research being done in the anti-aging field, you

can have a choice in how you age. It's better to nix the underlying problems than to just cover over the symptoms.

The basic tenets of anti-aging are this: your body is an interconnected system that is designed to run efficiently and in balance. Depending on factors that are largely in your control, such as how you handle stress and the types of foods you eat, your body will either remain in balance or will start to spin off-track. If it is headed out of balance, there are symptoms that will alert you—and that you will need to take action to moderate in order to bring balance back to the whole. And because of this interconnectedness, generally you'll find that taking healthy actions to support one area will have health-conferring benefits for the whole.

At the foundation of how you age is your hormonal system and whether or not it is in balance. If it's imbalanced, your chances of aging healthily are slim, which is why you need to understand and get a clear picture on your hormonal health.

HORMONE HEALTH

Hormonal health doesn't get the level of attention that it needs and deserves. If anything, recent media coverage regarding hormone replacement therapy and human growth hormone has fueled confusion—topics we'll get to shortly.

Your hormonal system is a vast, powerful complex of compounds responsible for regulation of a variety of processes such as growth, metabolism, mood and sexual function. And your hormonal system relies on a delicate interplay of balance among its different sub-systems. If one area experiences imbalance, it can lead to a domino effect. This is why it's so important to understand your hormonal system, recognize symptoms of imbalances, and immediately act to bring a return to equilibrium.

It's especially important because your hormone levels can greatly impact your life span. Hormone imbalances can begin as early as your 20's, and both men and women can be affected. That imbalance, or a drop in levels, can trigger symptoms that, if left untreated, can progress to a disease state. You can regenerate your health just by bringing a hormonal imbalance back to center.

There are several factors to consider when it comes to what's affecting your hormone balance. A major component is how your hormones are interacting with, and maintaining a balance between, one another. Another factor affecting hormone balance is how well your body is able to properly metabolize your hormones. Once you throw assorted environmental toxins into the mix and how your body reacts to them, you may find you're left with a hormone *blocking* effect where vital processes are not being carried out.

Your body holds a range of hormones, each with its own specific purpose as well as responsible for being a team player alongside all of the others. To get

hormonal balance and stability, each hormone needs to be performing at its optimum level—and those levels may need a boost in the form of hormone replacement therapy. Less than optimum, age-appropriate levels can leave you vulnerable to many age-related diseases.

Here's what you need to know about hormones, and then you can take action on getting them properly tested to see what state yours are in, and if necessary, treated appropriately until they return to a state of healthy balance.

Estrogen

The hormone estrogen is produced in women, and to a lesser extent, in men—and it affects the health of both. Estrogen is produced in the ovaries, the adrenal glands and in fat tissue. Your body actually makes three types of estrogen. Prior to menopause, women make all three estrogens along, with progesterone, until menopause arrives and changes the production levels.

- **Estrone (E1)**

In women, the ovaries convert estrone to the stronger estrogen hormone estradiol, but this ceases at menopause. Post-menopause, estrone is the main estrogen made by women. It continues to be produced in the fat cells, the liver and the adrenal glands, and production can actually increase. Meanwhile, the production of estradiol and progesterone drops drastically after menopause—along with the health-protective benefits each provides—and can result in estrone taking over to fill the void. When high estrone levels are coupled with low progesterone, the risk of breast cancer in women increases. This change in production values is why the majority of breast cancer cases occur in post-menopausal women.

Estrone is also implicated for uterine cancer in women and prostate cancer in men, due to stimulation of those tissues by making cells grow. And because estrone can be made in fat cells, obesity is implicated as another risk factor for breast cancer.¹ The more estrone production sites there are available, the more estrone that can be produced and lead to ill effects.

- **Estradiol (E2)**

The strongest of the estrogen hormones, estradiol is produced in the ovaries and handles many protective functions in the body. Estradiol helps aid in the absorption of important minerals such as calcium, magnesium and zinc. These minerals are essential for maintaining bone density, teeth, and immune function and for regulating blood sugar levels.

Estradiol also improves the production and release of human growth hormone (HGH), increasing HDL “good” cholesterol levels while lowering LDL “bad” cholesterol and triglyceride levels, and supporting brain function and mood. It's considered the *heart-protective* estrogen, and deficiencies can lead to heart disease, as well as dementia and osteoporosis.

- **Estriol (E3)**

Estriol is the weakest of the three estrogen hormones, but it plays a protective role in breast tissue. It blocks the effects of estrone by occupying the estrogen receptors located in those tissues. It also helps with the symptoms associated with menopause such as hot flashes, vaginal dryness and insomnia. Estriol also works to protect the heart by increasing HDL “good” cholesterol and reducing LDL “bad” cholesterol levels.

As women age, their estradiol levels decrease as their estrone levels increase. Men will experience an increase in both their estradiol and estrone levels. And the more fat tissue that accumulates around your mid-section, the more estrogen you will produce, leading to a state of estrogen imbalance.

The following are typical symptoms that can signal an estrogen imbalance:

Low estrogen

- Irritability
- Hot flashes
- Fatigue
- Brain fog (foggy thinking)
- Insomnia
- Loss of sex drive
- Osteoporosis
- Mood changes/depression
- Heart palpitations
- Bladder incontinence/infection
- Vaginal dryness
- Weight gain

Excess estrogen

- Anxiety and panic attacks
- Vaginal or oral yeast (thrush)
- Heavy bleeding
- Mood swings/teariness
- Fibrocystic breasts
- Tender breasts
- Decreased libido
- Joint and muscle pain
- Headaches or migraines
- Carbohydrate cravings

Estrogen metabolism

It’s important for both women and men to know their estrogen levels, but just as important is how your body is breaking down the estrogen. Together they provide a clearer picture of your hormone health. And you don’t have to wait until menopause to evaluate estrogen metabolism—you can work on improving the process now.

Estrogens convert into several metabolites that can be divided into “good” and “bad” categories. The “bad” estrogens have been associated with an increase in breast and uterine cancer, along with fibrocystic breasts, ovarian cysts and uterine fibroids. For men, it can lead to age-related prostate problems and prostate tissue growth.

Metabolism of estrogen occurs mainly in the liver and GI tract. If you eat a lot of refined sugar and have a low intake of fiber, you’re creating an environment for

unfriendly bacteria to flourish in your intestinal tract. They end up creating their own metabolic by-products, one of which, beta-glucuronidase, interferes with the excretion of estrogen metabolites. This allows the metabolites to build up over time in your tissues.

The relationship between the good and the bad metabolites is called the 2:16 ratio. In order to reduce the risk of hormone-related cancers, the minimum number you'd want for this ratio is 2, but preferably over 4.² A simple home urinalysis test can be done to determine your ratio.

There are steps you can take immediately to ensure healthy estrogen metabolism and improve your 2:16 ratio:

- **Add fiber:** Fiber, especially those with lignins such as flaxseeds, bran, beans and seeds, can bind harmful estrogens in the GI tract and efficiently excrete them. It also reduces beta-glucuronidase, allowing bad estrogen metabolites to be excreted, and can reduce the conversion of testosterone into estrogens in fat and breast cells.
- **Grass-fed organic beef and free-range chicken:** Meat from animals raised on hormones should be avoided. Also, these healthier protein sources are lower in saturated fat and higher in omega-3 fatty acids, which helps your hormone receptors function properly.
- **Organic vegetables and fruits:** Pesticides are known to disrupt hormone balance.
- **Add DIM (diindolylmethane):** A phytochemical found in cruciferous vegetables, DIM promotes good estrogen metabolites over the bad. Consider taking 75 to 300 mg of DIM per day.
- **Probiotics:** Promotes healthy flora in your GI tract and reduces beta-glucuronidase production. Try taking 10 to 60 billion units per day. You'll want to purchase live culture, human-strain probiotics.

Progesterone

Progesterone is another hormone that provides sex hormone balance in women (and occasionally in men), serving ideally as a counter-balance to estrogen. It's produced in the ovaries and the adrenal glands. During the menstrual cycle, progesterone preps the uterus for the arrival of a fertilized egg and supports pregnancy in the early stages. If no fertilized egg is received, levels of progesterone drop until the next cycle begins.

It contributes to maintaining a normal sex drive and regulating blood pressure. Progesterone also plays a role in the brain—where a high concentration of progesterone receptors is located. It supports your nerve cells and the protective myelin sheath that shields your neurons. Progesterone also supports mood, helping you to feel calm and enabling to sleep more soundly at night.

Progesterone has been found to help protect against cancer, especially in breast tissue.³ Healthy progesterone levels are associated with lower incidence of breast cancer.⁴

It is thought that an estrogen-progesterone imbalance can be attributed to the symptoms of premenstrual syndrome.⁵ If the ratio of progesterone to estrogen is too high, you will tend to store fat tissue and be at greater risk of insulin resistance. If that ratio is too low, you have a greater risk of breast cancer and other issues related to higher levels of estrogen. Progesterone levels can drop due to low levels of thyroid hormone, chronic stress, antidepressants, and deficiencies in vitamins A, B6, C or zinc. Also, a high intake of refined sugar and saturated fat can also lower your levels.

The following are typical symptoms that can signal an imbalance in your progesterone levels:

Low progesterone

- Anxiety
- Depression
- Difficulty sleeping
- PMS
- Premenstrual headaches
- Fibrocystic breasts
- Osteoporosis

Excess progesterone

- Increased insulin resistance
- Excess fat storage
- Elevated cortisol levels
- Food cravings
- Reduced growth hormone levels
- Immune function imbalance

To support progesterone production:

- Cut out refined sugar and fats
- Have your thyroid hormone levels checked (more on this shortly)
- Eat a wide range of healthy foods to ensure proper nutrient intake
- Take a good multi-vitamin to cover your nutrient bases
- Consider taking chasteberry, an herb known to bring balance to estrogen and progesterone.

Testosterone

Like estrogen, the testosterone hormone is produced in both men and women, but is dominant in males. It's produced in the testicles and the adrenal glands. Testosterone boosts sexual desire, increases emotional balance, maintains memory and supports strong bones and muscle mass.

Approximately half of the testosterone produced is bound by sex-hormone binding globulin (SHBG), making it unavailable. As you age, SHBG increases which leads to a drop in free testosterone and an increase in estrogen levels. This can cause you to gain weight gain in your belly, and remember: the more fat you store, the more estrogen is made.

Women aren't the only ones to experience changes in their hormones as they reach middle age. In men, the process is called *andropause*, and it can lead to a variety of symptoms and diseases. Andropause is starting to receive the type of scientific attention that has been given to menopause, and more is being learned about the effects of andropause on men.

One of the most noticeable symptoms of andropause is a loss of muscle strength along with the vigor and stamina you had in your youth. You may notice your muscles are getting a little deflated, and you're experiencing aches and pains you never had before. But even more disturbing to a good many men is the loss of sex drive and performance that comes with a change in testosterone levels. Women who are low in testosterone also experience a low sex drive.

As much as it disrupts your quality of life, a drop in testosterone levels can also increase your risk for a variety of diseases, cognitive decline, and even death. A recent study found that men with the lowest testosterone levels were 40% more likely to die than those with higher levels.⁶ Low testosterone could actually be used as a predictive marker for an increased risk of cardiovascular and respiratory disease.

Low testosterone levels and imbalances can lead to insulin resistance and diabetes, Alzheimer's disease, cancer, and a loss of bone density.

A saliva test can be effectively used to measure sex hormone levels and determine whether or not you have a deficiency. Saliva tests show the levels of "free" hormones that are moving around in your body—free to get into cells. To check your testosterone levels, your test should include total testosterone levels, sex-hormone binding globulin (SHBG) and free testosterone levels in order to give you the most accurate picture.

The following are symptoms that can signal an imbalance in your testosterone levels:

Low testosterone

- Loss of strength and muscle mass
- Decreased stamina
- Loss of focus and drive
- Fatigue
- Anxiety and depression
- Muscle and joint aches
- Memory problems
- Weaker bones

To support balance in testosterone levels, try:

- **Chasteberry:** This herb can increase luteinizing hormone, which in turn stimulates the production of testosterone.
- **Zinc:** An important co-factor in the production of testosterone. The highest concentrations of this mineral are found in the prostate gland. Studies

have shown that men with zinc deficiency can experience an increase in their testosterone levels by supplementing with zinc. Stick with less than 150 mg per day, as anything over that could potentially have toxic side effects. Also, choose the zinc picolinate form. You can also eat zinc-rich oysters and grass-fed red meat to boost your intake.

- **Cutting out smoking and excess alcohol:** These can lower your testosterone levels.
- **Boron:** A trace mineral, boron is effective in just the small amounts needed. It cuts the risk of prostate cancer and promotes healthy bones and joints, which negates the effects of low testosterone in the body. To supplement, try 3 to 6 mg per day. It's also found in fruits, nuts and legumes.

The benefits of hormone replacement therapy

When sex hormone levels begin to fluctuate dramatically, your body's reaction to it can leave you with a variety of unpleasant symptoms and effects. Depression and mood imbalances, loss of muscle tissue, fuzzy thinking and loss of sex drive are just some of those that affect your quality of life.

In addition to the symptoms, a hormone imbalance can increase the risk of diseases such as diabetes, some forms of cancer, Alzheimer's disease, and osteoporosis. Hormone levels can fluctuate even in your younger years, but they definitely drop during middle age. This leaves a lot of years in which to feel not only miserable, but to become more susceptible to the age-related diseases brought on by the imbalance.

As life expectancy has increased, it has created a need to prepare and plan for a longer period of years for which to remain healthy and slow the aging process. If we were only living into our 50's, Alzheimer's disease and osteoporosis maybe wouldn't get the opportunity to become a life-affecting health issue. But when you consider that many people now live into their 80's, 90's, and past the century mark, you have to prepare for many more decades in which your body and mind must fend off a variety of undermining influences, inside and out—and that includes your hormones.

This is why hormone replacement therapy (HRT) deserves consideration. HRT is designed to boost hormone levels to the point where you maintain good health and quality of life as you age rather than allowing imbalances to take over and tip the scales toward disease. Research continues to evaluate how hormone replacement can accomplish the feat of turning the tables and undermining all of those life-crippling diseases associated with aging.

For women, the research has been more in-depth regarding the benefits of HRT. Perimenopause for women begins in their late 30s to early 40s, and lasts for eight to thirteen years. During that time, hormonal levels rise and fall—bringing with it all of the attendant symptoms such as hot flashes, anxiety, sleeplessness

and irritability. Women begin to feel they're on a physical and emotional roller coaster—and they want relief.

HRT has been shown to help diminish the severity of those symptoms in women. Even more important is addressing the ill effects that underlie the surface and are igniting disease processes—many of which you won't know about until they're well entrenched. One factor that would be addressed through HRT is the increased risk of bone loss. Estrogen, progesterone, and testosterone are needed to maintain bone density as you age. Estrogen metabolites are important for bone density in both women and men (with men requiring only small amounts of the right estrogen metabolites).

As to the benefits of HRT, the research is beginning to catch up. While the focus has long been on women and hot flashes, men have been living with their own symptoms due to low testosterone levels, such as loss of sex drive, focus and stamina. Muscle mass and strength decrease. And while that can be challenging enough to deal with when trying to perform normal, every day tasks—it can also set men up for injuries.

Just as with estrogen, waning testosterone levels can leave men at greater risk of developing the diseases of aging. Researchers have found that as many as 25% of males will have lower testosterone levels by the age of 35. Low testosterone can leave men vulnerable to becoming insulin resistant, which in turn can lead to both diabetes and heart disease. As men age, their available free testosterone is bound by sex hormone binding globulin (SHBG). Bound hormones, unlike free hormones, are unable to actively influence cells in the body. This can lead to the increase in insulin resistance and the phenomenon of “middle age spread,” where weight is gained, especially around the middle.

Low testosterone levels can also lead to osteoporosis in men, along with too little of those necessary estrogen metabolites that support bone density, which is why estrogen levels must also be checked, along with dihydrotestosterone (DHT), a testosterone metabolite. The body can convert testosterone into estrogen and DHT—something you don't want.

HRT: Clearing the confusion

There has been some controversy and confusion surrounding the topic of hormone replacement therapy. The National Institutes of Health (NIH) conducted clinical trials for a study called the Women's Health Initiative (WHI). The research involved PremPro, a synthetic HRT product made up of progestin and equine estrogen (taken from the urine of pregnant mares). The WHI Data and Safety Monitoring Board noticed a slight increase in the risk of breast cancer, heart disease, stroke and blood clots in postmenopausal women.⁷ Because of this data, they decided to err on the side of caution and stop the study immediately. There were a couple of positive findings before the study was halted: a reduction

in hip fractures and colorectal cancer. But these findings were overshadowed by the risk findings.

As a result of the study, sales of PremPro and Premarin went down. Next, the rate of breast cancer dropped a dramatic 7% in the first year after the results were released, which was most likely attributable to the large number of women who stopped taking HRT.⁸

Once the reports on this study came out, many people were left struggling with what to do to control uncomfortable symptoms and stave off disease risk. There are actually two types of HRT: conventional and bio-identical. But the way the media has handled the topic, there has been little distinction made between the two.

Hormone imbalance is too great a factor in disease processes and overall quality of life to just ignore. If you're seeking symptom relief, a way to bring balance back to your hormone levels, and an option in staving off age-related diseases, consider natural hormone replacement.

Unlike conventional HRT drugs such as was used in the WHI study, natural hormone replacement is chemically identical, or bio-identical, to the hormones your body makes. Your body's hormone receptors recognize them. These natural forms are derived from plant sources such as soybeans and wild yams. Conventional HRT drugs, because they're *not* chemically identical, are unable to create a perfect fit with your body's hormone receptors. So already, you're batting a better average by using a substance with which your body is already familiar.

However, as research continues on bio-identical hormone therapy (BHRT) use, it's wise to take a cautious approach. The reason for caution in any hormone therapy is that any time you are dealing with an increased amount of estrogen in the body, it must be monitored—along with the ratio of progesterone—due to the increased risk of breast cancer. But so far, study results have not measured any increased risks for diseases from BHRT use. It's showing promising results in the small number of studies that have been done to date.

Again, the ratio of estrogen to progesterone must be monitored while receiving BHRT. Natural progesterone replacement has been found to provide a boost to cognitive function as the brain ages, level out sleep disturbances, and lower anxiety. The blood ratio level of estrogen to progesterone should be at 8 (estrogen) to 10 (progesterone).

Levels of sex hormones are checked first, and then an individual BHRT can be prepared to fit your particular needs. There are recommended steps you take when considering BHRT therapy:

- 1) Mammogram or breast thermography prior to beginning therapy
- 2) Evaluation of estrogen levels while using BHRT
- 3) Measurement of how your body is processing its estrogen during therapy

There are several forms of BHRT dosage: pills, transdermal creams or patches, injection (testosterone), pellet implants (testosterone), and troches, which are medicated lozenges. Your doctor can prescribe which treatment will work best for you.

Success with BHRT depends on overall balance in your system, whether it's maintaining your blood sugar levels to keeping your stress level low. It translates into healthier cells that are able to respond optimally to hormone therapy.

And just as important is having balanced hormone levels throughout your body. It doesn't make sense to try to fix one set of hormones without knowing what's going on with the others.

Thyroid

Below the Adam's apple in your neck lies the thyroid gland. It secretes thyroid hormones that are responsible for regulating the speed of your body's chemical functions, or metabolic rate. Thyroid hormones also stimulate the body's tissues to produce proteins necessary for growth and repair, increase the amount of oxygen that your cells use, and stimulate energy production in every cell of your body. These hormones are found in two forms, called T3, the active form, and T4, the inactive form that needs to be converted to T3.

If your thyroid hormone levels are low (hypothyroidism), the metabolism of fats decreases while serum lipids increase, inflammation and oxidative stress can increase, and you have a tendency to gain weight and feel worn out. In addition, your hair, nails and skin aren't as healthy, and muscle and joint pains can plague you.

It's actually the persistent fatigue that drives people to their doctors, complaining of feeling tired all the time. Their doctor will send them for testing, suspecting the thyroid, but more often than not, the test results come back as "normal."

But what's considered *normal* leaves a lot of people out in the cold. They may still have a thyroid imbalance, called subclinical hypothyroidism. But because they didn't make the conventional testing cut-off point to be properly diagnosed—they're still left with symptoms and *no treatment*. The basic thyroid tests that are given only look at two things: thyroid stimulating hormone (TSH) and the thyroid hormone T4. In subclinical hypothyroidism, TSH can be slightly elevated and T4 will register as low normal. For a thorough picture of what's going on with your thyroid, your free T3 and thyroid antibodies should also be evaluated.

The thyroid hormones are also involved with balancing the sex hormones. If your thyroid is functioning less than optimally, production of pregnenolone—needed to build sex hormones—is reduced. And because thyroid hormones regulate metabolism, a decrease in thyroid hormone levels can throw off your metabolism. This has a ripple effect throughout the body, such as nutrients not being absorbed as needed, leaving your body unable to get the nutrients it needs to function properly. Also, hormones are unable to bind to their receptors adequately, leading to a domino effect of hormonal imbalance.

There is a range of factors that could be affecting your thyroid. If you're not getting enough iodine or selenium, it could be impacting your thyroid hormone levels. Environmental influences such as heavy metals can also impact your levels. The single biggest threat to your thyroid is stress, which tends to be the underlying cause for most people's thyroid imbalance.

A blood test can determine your thyroid hormone levels. Healthy ranges for your thyroid should be:

TSH: below 2

T4 (thyroxine): Over 1.0 and ideally at least 1.2 ug/dL

Free T3 (free thyroxine): 320 to 350pg/mL

Thyroid hormones that are low or imbalanced can be boosted with these supplements, the majority of which will be found in a good multivitamin:

- Iodine
- Magnesium
- Iron
- Selenium
- Zinc
- Chromium
- Vitamin A
- Vitamin C
- B vitamins: B2, B3, B6
- Seaweed (*Fucus vesiculosus*)
- Bacopa (*Bacopa monnieri*)
- Guggul (*Commiphora mukul*)
- Ashwagandha (*Withania somniferum*)

Adrenal glands

One of the most overlooked glands in the body are the adrenal glands. Located near the top of each kidney, they're on the front lines when it comes to managing stress. The adrenals are responsible for regulating the release of the stress hormones cortisol and adrenalin (epinephrine), based on signals received from the brain.

Cortisol, when it's in proper functioning mode, serves a very important function in helping the body to balance and maintain a range of processes. It's released in response to perceived dangers, readying your body to take flight or fight—which works well in moderation. It also provides anti-inflammatory response, helps control blood sugar levels, keeps blood pressure in check, maintains muscle strength, and controls the levels of salt and potassium in your body.

When release of your stress hormones is triggered, it sends your blood sugar surging for a quick energy boost. This makes your body response-ready to deal with the perceived danger, or stressor, you're facing.

Cortisol has a reputation for being a destructive force—a reputation earned with very good reason, considering our modern, harried lifestyles. When you push your body to the limit, whether it's through excess worrying or other stressful situations, your adrenals sense the threat and continue to pump out cortisol. When this stress response becomes chronic, spewing out these stress hormones day in and day out, the adrenals become fatigued from being overworked.

And when your adrenals become fatigued, known as adrenal exhaustion, *so do you*. Suddenly you find that just the act of getting through your normal day is a challenge. This becomes a vicious—and aging—cycle.

You can test cortisol (and therefore adrenal function) in one of two ways: blood or saliva. If you have a blood test, it should be done at 8 a.m. to determine your morning cortisol peak. A saliva test will track your cortisol levels at 4 points during the day to see if they are following the right pattern.

To help recharge your adrenals, consider these supplements:

- **Rhodiola rosea:** Classified as an adaptogen, this herb can help balance stress levels in your body. Adaptogens have a moderating effect throughout the body, and if your adrenal glands are at the point of burn-out, they need something in their corner to balance them. Try 100 to 250 mg, 3 times per day. The standardized product you choose should contain 5% rosavins, 1% salidroside and/or 40% to 50% phenyl-propanoids.
- **Holy basil (*Occimum sanctum*):** Supports healthy adrenal gland function. It also can help regulate glucose levels, which should help stabilize your energy level. Take 400 to 800 mg, one to two times per day, standardized to 1-2.5% ursolic acid.
- **L-theanine:** An amino acid found in green tea leaves that may help decrease stress and help you sleep. Improves focus, ability to concentrate, and calms your racing mind. Take 100 to 200 mg, 1 to 4 times per day.

DHEA

Dehydroepiandrosterone, or DHEA, is another hormone made in the adrenal glands. It's the precursor of estrogen and testosterone, and has been considered a "Fountain of Youth" hormone. Natural production peaks in your 30s before going into decline at a rate of about 2% per year thereafter.

DHEA has remarkable anti-aging properties, protecting against the classic outward signs of aging such as excess body fat, thinning skin, and your body being pulled out of alignment by weakening bones.

Inside your body, a deficiency of DHEA can leave you vulnerable to chronic inflammation, depression, cognitive decline, and increased risk of cancer.

DHEA is the raw material from which our sex hormones are produced. It works in balance with cortisol, both of which are made from pregnenolone. But when stress boosts the output of cortisol, DHEA suffers the consequences—with its production going down. And with less DHEA being produced—now your sex hormone levels are impacted.

DHEA also helps your body burn glucose for energy and also plays a role in food cravings because it increases the production cholecystokinin (CCK), a hormone that tells your brain that you have had enough to eat. With low production, your appetite will increase.

The following are symptoms of low DHEA:

- Loss of sex drive
- Increase in appetite
- Brain fog
- Decreased energy level

Your DHEA levels can be checked through either saliva or blood testing. If your levels are low, try these to bring a return to balance:

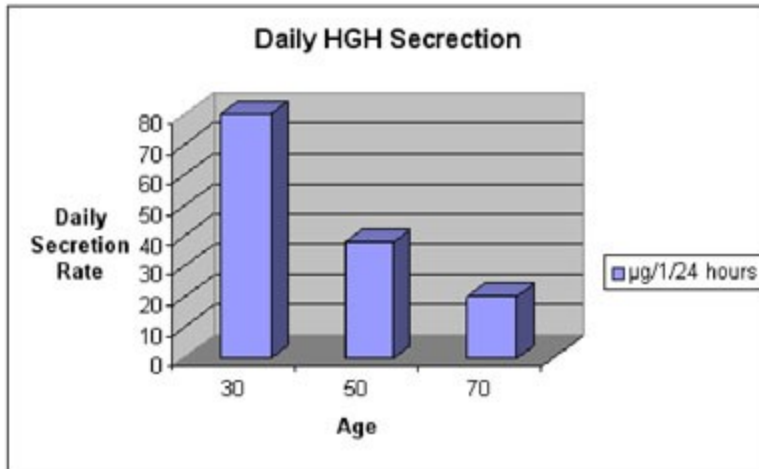
- **Relora®:** This formulation is based on a patented blend of extracts used in Chinese medicine for almost two millennia. It helps stabilize cortisol and DHEA production and moderates the stress response so that you'll feel calmer throughout the day. Take 250 mg (one capsule), 2 to 3 times per day as needed for stress management.
- **DHEA:** Should be taken under the supervision of a doctor who is experienced with bioidentical hormones and can give a test to determine whether or not you'll benefit, and can prescribe an appropriate dose.

Human Growth Hormone

There's one crucial compound that separates the young from the old: human growth hormone, or HGH. It's produced by the pituitary gland, and production goes on the decline as you age.

You probably have heard a lot of negative press surrounding the topic of human growth hormone. When professional baseball players began taking it to enhance performance, the debate swirled about its effects. HGH was lumped into the same basket as anabolic steroids—which it is *not*. However, it *can* give a competitive advantage to players who use it, which was deemed to be an unfair edge and is therefore considered illegal within professional baseball.

Yes, it works that well that even athletes can't help but want to harness its power. In your youth, your system pumped out streams of HGH. But the stream slows to a trickle as you age—unless you do something to give it a boost.



Your HGH pump can be primed to produce that stream of HGH again. And that can have a powerful impact on some of the symptoms of aging that anyone would desire—even professional sports players. Research has uncovered evidence that shows adequate levels of HGH can reverse:

- Energy loss
- Muscle loss
- Bone loss
- Immune system sag

While it's reversing those aging symptoms, it can also improve:

- Thinning and wrinkling skin
- Lagging sexual performance
- Impaired vision

And contrary to the mangling of its reputation in the press, HGH is safe. Remember, it's a natural substance that is created in your own body. Research findings support that it provides an enormous benefit for those who need it.

One early study showed a profound improvement in the participants who took part.⁹ The researchers recruited 12 men between the ages of 61 and 81 and enrolled them in the study. These men shared general age-related complaints in common: a lack of energy, muscular weakness and carrying excess weight.

In just 6 months of hormone therapy, what emerged were 12 men transformed: To a man, they were lean, strong and energetic. The lead researcher noted that

these changes in just 6 months had rolled back an astonishing 10 to 20 years of negative aging effects.

The results of the study showed:

- ❑ Increased lean body mass: 8.8 percent
- ❑ Loss of body fat: 14.4 percent
- ❑ Increased bone density (lumbar spine): 1.6 percent
- ❑ Thickening of skin: 7.1 percent
- ❑ New liver growth: 19 percent
- ❑ New spleen growth: 17 percent

This groundbreaking study set the stage for further research to support the effectiveness and regenerative benefits of HGH. It can provide a boost to your overall health and combat the ravages of aging in the body, especially for:

- ❑ Heart health
- ❑ Immune system response
- ❑ Lung capacity
- ❑ Sexual performance

Because the peak release times of HGH occur when you first go to sleep as well as secreted in irregular bursts, testing your levels is a challenge. But your levels can be tested by measuring your level of insulin-like growth factor-1 (IGF-1), which is released in response to growth hormone changes.

There are natural ways to boost your HGH levels:

- 1) **Engage in strenuous exercise:** If you're physically able, then start thinking like an athlete and embrace a good sweat. Studies have shown that the more vigorous the exercise you engage in, the more that HGH production is increased.¹⁰
- 2) **Boost protein intake:** A more moderate increase in HGH production has been associated with a high protein diet.
- 3) **Adequate sleep:** The release of HGH begins to occur about 30 to 60 minutes after you go to sleep.¹¹

Also, you may want to consider these supplements, which are easily found in your local health food store or from an online source:

- 1) **Arginine:** This is an essential amino acid that your body can't produce on its own. It boosts HGH production and blocks the efforts of somatostatin, a substance bent on blocking its anti-aging effects. Arginine will help you build strength and endurance while burning fat. Take 2 to 5 grams on an empty stomach an hour before you exercise or before bedtime. You can also get arginine from food sources such as turkey and chicken.
- 2) **Glutamine:** During times of stress, your body depends on this amino acid. It also boosts immunity and digestive function, as well as HGH levels.

Glutamine is found in high protein foods, and if you aren't getting enough, you'll lose muscle and your immune system won't be as effective. Take 2 grams at bedtime.

The AGING ACCELERATORS

Besides hormone imbalances that can wreak havoc throughout your body, there are other considerations you'll want to address. They are again examples of processes that, when in balance, do their job, but when they're not—they'll ruin your health and age you.

Homocysteine

Homocysteine is a natural byproduct of cell metabolism, the result of an amino acid called methionine being broken down. It leaves homocysteine behind as waste. A chemical process that occurs in your body, called methylation, breaks down the homocysteine into a nontoxic amino acid. When methylation is functioning normally, this keeps your levels of toxic homocysteine low in your body.

When methylation isn't working normally, homocysteine levels build up and can place you at greater risk for Alzheimer's, Parkinson's, heart disease and impotence—all age-related diseases. A study was reported in the *New England Journal of Medicine* that showed a homocysteine level over 15 increased the risk of death in patients with heart disease over 6 times.

High levels of homocysteine are also linked to osteoporosis. Low estrogen levels can raise homocysteine levels in women, making them even more susceptible to osteoporosis.

These high homocysteine levels have also been found to accelerate the aging of your cells. At the ends of each of your cell's DNA, there are protective protein caps called telomeres. Every time one of your cells divides, it replicates the information between those ends, but does not replicate a portion of those ends along with it. This means that every time your cells divide, the telomeres become a little shorter.

The length of a telomere is now considered a marker for a cell's age: The shorter, the older. Also, telomeres direct the aging process by signaling cells as to when their time is up, to stop dividing, and to allow that cell line to die off. And researchers have found that a high homocysteine level can *triple* the amount of telomere length that is lost during cell division, in effect speeding up the process.¹²

Inadequate intake of the B vitamins can lead to abnormal methylation, which will cause your homocysteine level to increase. In the famous Nurses Health Study, researchers looked at the incidence of heart attacks and intake levels of B6 and folate. Participants began with no prior history of heart disease. Results showed

that for those with the highest intakes of B6, there was a 30% lower risk of heart attack than for those who had a lower intake. And study participants who had a high intake of both folate and B6 had less than half the risk of heart attack.¹³

There's a simple blood test you can have done to test your homocysteine levels. If the results show high levels, you don't have to resort to drugs to lower them—there are natural ways to restore balance.

The following is a daily supplement regimen you can take to lower your homocysteine levels:

Vitamin B12: 500 mcg

Folic Acid: 800 mcg

Vitamin B6: 25 mg

Riboflavin (B2): 25 mg

TMG (trimethylglycine): 500 mg; Also called betaine, TMG helps break down homocysteine.

Insulin resistance

One of the surest ways to accelerate aging is to allow stress to handle *you*, rather than you managing your stress. A short-term stress response initiated by the adrenal glands is a survival mechanism, built into our systems as the well-known “fight or flight” response. But when that survival response moves from the short-term and into a chronic response, it can have a destructive effect on the very thing it was designed to protect: you.

Your adrenals aren't the only victims of chronic stress. As we've seen with hormone levels throughout your body, chronic stress can cause massive disruption, affecting every system. It is now believed to be a factor in over 80% of the diseases and illnesses that plague us. Stress is the gateway to a range of health issues, and insulin resistance is one to especially be concerned about. Remember that blood sugar is sent surging in response to stress, and that can impact your insulin production—especially if stress is chronic and these blood sugar surges become the norm.

Insulin is produced in the pancreas. During the stress response, cortisol signals your pancreas to pump out more blood sugar to provide the energy you need to fight—or flee—the threat.

But chronically high levels of cortisol can cause a negative effect: food cravings—especially for carbohydrates. You crave those carbohydrates because your body is trying to counter the effects of excess cortisol, which has a *lowering* effect on serotonin levels. Serotonin is the neurotransmitter that brings calm to your brain and your gut, and excess cortisol leaves your body wanting. Once you give in to that carbohydrate craving, it will give a boost to serotonin production. But it also leads to a boost in your blood sugar levels, even though these levels

are already high due to the excess cortisol levels that set everything off to begin with—setting off a truly vicious cycle.

Once glucose levels begin to stay chronically elevated, it can lead to insulin resistance (IR), where the insulin receptors located on your cells are no longer functioning properly. Your body's cells then become starved for glucose—the main source of fuel they need to produce energy. IR now leads to your feeling fatigued, or “old.” What you're really feeling are the effects of normal processes in your body that have gone awry—and in this case, it all began with stress that became a runaway train.

IR also leads to weight gain, especially around your waist and in your belly, which has been linked to chronic diseases such as heart disease, type 2 diabetes, cancer and Alzheimer's disease.

A familiar scenario for people with stress-induced IR is that when midday comes along, they feel as if they could easily crawl back into bed. Their fatigue becomes a hurdle to overcome in order to get through their day. Many people attempt to prop themselves up with artificial stimulants such as caffeinated drinks and sugary snacks. Once again, another vicious cycle is being set into motion, and the underlying cause needs to be addressed.

To maximize your energy levels and keep your body from building fat stores, your insulin blood levels need to be kept low:

- Risky: 20 or higher
- Normal: 11 to 20
- To maximize anti-aging potential: 4 to 10

To begin with, sticking with a healthy, low-carb diet can do wonders for IR-induced fatigue. To guide your carbohydrate choices, use the Glycemic Index. Also, you'll want to eat plenty of protein, as it has a stabilizing effect on insulin. Exercise will also provide insulin control.

It's critical to reign in out-of-control stress in order to regulate your blood sugar levels. But stress isn't done with you yet—not by a long shot.

SLEEP

As you age, your melatonin levels begin to decline. Add to that a chronic stress response, and you have a sleep issue on your hands.

Elevated cortisol interrupts the production of serotonin, taking you down the path of food cravings and into IR. But it also throws off your melatonin production—which is made from serotonin. Melatonin is the hormone responsible for helping you to fall—and stay—aspell each night.

Lack of sleep can lead you into insulin resistance, placing you on the merry-go-round of unhealthy aging. Your body will begin craving carbs in an effort to boost its levels of serotonin. And without that serotonin, the conversion to melatonin won't take place, or it will squeeze out so little that you'll find yourself awake between 2 and 3 in the morning wondering why you can't sleep.

Another aging factor that is affected as a result of too little sleep is your HGH production. As we saw earlier, it does its work while you're sleeping, and if your sleep is thrown off—so is your HGH production.

The increased fatigue that comes from not getting enough sleep can leave you in a state of brain fog, making you more susceptible to visual and foot miscalculations. This can lead to falls and other accidents. Falls are the leading cause of death for older adults.¹⁴ If you don't die from the actual fall or from the related injuries, your ability to get around could become severely limited.

The National Sleep Foundation has found that 7 to 9 hours of sleep each night is optimal, with the most restful sleep occurring between 9:00 p.m. and 9:00 a.m. But don't think you need a prescription sleep aid to reach your nightly sleep requirement. Simple lifestyle changes such as maintaining the same bedtimes each night can make the difference. And getting a grip on stress will do wonders for your slumber, not to mention benefit every system in your body.

Besides helping you sleep, melatonin has anti-aging properties that help you to look and feel younger due to its antioxidant power. This fights free radicals, the molecules responsible for ravaging cells and leading to diseases such as cancer and Alzheimer's. Studies have also shown that low melatonin levels can increase risk of breast cancer in women.

You can take just 0.5 mg a day of melatonin for its anti-aging and protective benefits. But if you do need help sleeping, take between 1.5 mg to 2 mg before bedtime. If you have a chronic disease, you may want a stronger dose, 20 mg to 40 mg, before bed. However, this is not the case of "more is better." Any doses higher than this should be discussed with your doctor.

BRAIN HEALTH

Your brain health is dependent on hormone balance. It's the pituitary gland, which is located in your brain that secretes and maintains balance in your hormones. Hormonal imbalance can disrupt neurotransmitter function. Neurotransmitters are the chemicals that are found throughout the body, but especially in your brain. When neurotransmitter function is disrupted, so is your brain's ability to carry out all of its functions. Neurotransmitters such as serotonin, dopamine, norepinephrine, and epinephrine (adrenaline) can be thrown off-kilter, leading to changes in mood, depression, impaired cognitive ability and a lack of energy.

One study found that cognitive decline in elderly men could be attributed to high levels of estradiol and estrone.¹⁵ That's just one example of hormone imbalance. We've already looked at the effects of cortisol on the brain, and how it can throw off the production of serotonin and melatonin. But that's not all.

If you aren't getting adequate sleep each night, you're inhibiting your brain's ability to generate new neurons, particularly in the hippocampus region where your memory processes occur.¹⁶ The production of neurotransmitters can begin to diminish as you age, so the last thing you want to do is cut off an opportunity to create new neurons by not addressing the sleep issues that are preventing you from getting a full night's rest.

One of the most common causes of memory loss can be attributed to disease—memory impairment a byproduct. Severe depression can damage your memory, due to a chemical imbalance in your neurotransmitters that can lead to difficulty in storing new memories.

Insulin affects the brain, as well. High glucose levels associated with diabetes can alter blood flow in the brain, which can impair memory and the metabolism of brain energy. It can also disrupt function of the blood-brain barrier, the membrane responsible for protecting your brain from chemicals in the blood.

Even high blood pressure can wreak havoc on your memory. Think of the pressure that's hammering away at your blood vessels. It can stress and weaken them to a point where they begin to tear.

Excess cortisol not only affects the brain's chemicals—it's also a physical stressor to the brain. At high levels, cortisol is a destructive force, and the brain is no more fortified against its attack than any other organ in your body. In particular, it can weaken the hippocampus—your memory storehouse. These high levels of cortisol can accelerate the deterioration of the aging hippocampus.¹⁷ In one study, 60 people between the ages of 60 and 85 had their cortisol levels tested. One-third of them had chronically high levels. The size of their hippocampus measured on average 14% *smaller* than a group with moderate and lower levels of cortisol.¹⁸

But it's not all bad news for the brain—as long as hormones are brought back into balance. There has been exciting research regarding the ability of the brain to remain strong and healthy as you age. It tosses the idea that the brain stops being capable of learning new things just because it happens to be an older brain. A recent push in brain science is the idea of brain “plasticity.” This means that, like plastic, the brain can be molded and is able to make new neurons well into adulthood.¹⁹

To maximize your brain's ability to age healthily, there are things you can begin doing immediately to enhance your brain power:

- **Maintain a healthy diet:** By eating a well-balanced diet, you're giving your brain the nutrients it needs to function optimally.
- **Exercise:** Studies show that regular exercise boosts cognitive function.
- **Social interaction:** Interacting with other people stimulates the brain.
- **Brain exercises:** Mix up your brain workouts. The brain has many areas and therefore needs a variety of ways to stimulate it.²⁰ Give your brain the best by providing it with new and challenging things to ensure you have variety, whether it's by taking classes, trying a new sport, reading a different genre than usual, or dusting off your old musical instrument and playing again.

And if you feel chronic stress has given your brain a beating, there are supplements you can take to boost your serotonin levels:

- **5-HTP:** This amino acid is converted into serotonin. Take 50 to 100 mg up to 3 times per day. If you're taking an antidepressant, talk to your doctor familiar with natural products *before* you take this supplement. There have been undocumented accounts of there being a contra-indication between the two, but new research has found that 5-HTP can actually help build serotonin so the antidepressants will be more effective.
- **SAMe:** Involved in the synthesis of neurotransmitters, SAMe has antidepressant properties and may help with feelings of anxiety and mild depression associated with chronic stress. Take 400 mg, 2 to 4 times per day. If you're already taking an antidepressant, you'll want to talk to your doctor first before taking this supplement.

Nutrition

That old adage "you are what you eat" is only too true. What you eat has a direct impact on every part of your system, from mood to energy level to how your skin looks. If you want to combat unhealthy aging, the following guidelines will help.

Plan your meals so that they revolve around:

- **Low carbohydrate intake:** Carbs aren't the devil, but you don't want them making up the bulk of your diet due to their ability to fuel insulin resistance. When you do eat carbohydrates, aim for healthier choices. The Glycemic Index can guide you. It rates carbs based on how they affect blood glucose levels. Choosing carbs that rank low on this scale is healthiest because they may only cause a mild bump in your blood glucose and insulin levels rather than a drastic surge.
- **Quality protein:** You need protein to build muscle, which works to keep you lean. Also, HGH production increases in relation to a high-protein diet. It's a moderate increase, but any boost to HGH brings a dramatic impact to your anti-aging plan. Choose fish and grass-fed beef—excellent protein

sources with the extra benefit that they have the healthiest levels of omega-3 fatty acids, as well.

- **Antioxidants:** The best way to fight oxidation in your body and neutralize the resulting free radicals that damage and age your cells is to eat foods rich in antioxidants. They can be found in vitamins, minerals and enzymes, so eating a balanced diet that includes a wide variety of food ensures your body is getting what it needs.
- **Pure water:** Drink at least 8 glasses of water every day. It helps carry nutrients to your cells and remove toxins from your body. Reverse osmosis water is the cleanest with a slightly acidic pH. This is ideal, as it won't affect the absorption of key nutrients or interfere with your digestive system's ability to break down proteins into the amino acids your body needs. Also, drinking enough water prevents dehydration, which can affect your digestive system's ability to move waste efficiently, cause brain fog, and lead to skin problems.

Greatly reduce or eliminate the following aging accelerators:

- **Trans fats:** Foods that contain hydrogenated or partially-hydrogenated oils can increase oxidation in your body, which can throw off your metabolism, increase disease-inducing inflammation in your body, and promote insulin resistance and hormonal imbalance. That's just the tip of the aging iceberg. They can also boost LDL "bad" cholesterol and decrease HDL "good" cholesterol, which can lead to heart disease.
- **Refined sugars:** Foods high in sugar have no redeeming value beyond "tasting good." Redefine "good" if you want to keep your body young. Refined sugars can lead to depletion of key nutrients such as magnesium and chromium, cause the spike and crash effect in your blood sugar levels, make you tired, and lead to insatiable cravings for an endless cycle of more refined sugar.

Fitness to round out your anti-aging plan

Some researchers think that fitness assessments should be part of a regular doctor's visit.²¹ They point out that several studies have shown a correlation between low physical fitness and higher risk of the diseases associated with aging. Exercise is even considered an *anti-aging intervention*.

It doesn't get much clearer than that. Exercise keeps you lean while shedding fat, reduces stress and therefore cortisol levels, and has a balancing effect throughout the body. Engaging in regular physical activity can help stave off or delay the onset of heart disease, hypertension and osteoporosis. And stronger muscles can help prevent falls—those muscles helping to make you more stable on your feet.

Exercise also improves insulin sensitivity and how your body burns its glucose stores, and boosts your metabolism. While you're at it—your mood will be better because physical activity stimulates the feel-good neurotransmitters in your brain.

And if that's not incentive enough—regular exercise can also boost your energy levels. If you're dragging with fatigue, you may not realize that a good blood-pumping workout could be just the remedy you need. After all, you're already wiped out. But the extra effort it will take to get moving will pay off in dividends of energy in return. Research has shown that when sedentary people complete an exercise program, they report improvement in their symptoms of fatigue compared to those who did not engage in a program.²²

Exercise can increase energy levels in people who are suffering from diseases such as cancer or heart disease.²³ Many of these diseases ravage a person's energy stores, and exercise has been found to be a way to combat the resulting fatigue.

The more strenuous the exercise that you do, the greater the boost you'll give to HGH production—which goes a long way in keeping you younger, longer.

Reduction of stress and fatigue to round out your anti-aging plan

Many people are hitting their limit daily to the point they're just grinding their gears. This is where cortisol goes into overdrive and unravels operations throughout your body. One of the biggest side effects of this lifestyle is the overwhelming fatigue that accompanies it.

We just looked at exercise as a way to boost energy levels. But there's more you can do to help eliminate the underlying problem of cortisol: you need to get its production regulated.

For many people, it can be a real challenge to come down off of a pedal-to-the-metal lifestyle. There is a class of herbs called adaptogens that provide a balancing effect in the body. Amazingly, these herbs seem to know when your body has too much of something or not enough—and it goes about bringing it back into balance. Many of these herbs have been used for centuries. They include rhodiola rosea, ashwagandha, American ginseng, and cordyceps, a medicinal mushroom.

In regards to cortisol, adaptogens can lower its overproduction to a more normal level. This will reduce the damage that run-away chronic stress can do to your body. And the pleasant side benefit will be a boost to your energy level.

There are other supplements you can take to help you in your journey to a calm, focused, alert state.



For additional help in bringing about calm, consider taking:

- **Holy basil:** It may lower cortisol output related to chronic stress. Also helps fight oxidation that can cause adverse aging.
- **Theanine:** Found in green tea leaves, this amino acid binds to excitatory neurotransmitter receptors (glutamate) to bring a calming effect.

Supplements to round out your anti-aging plan

A sufficient intake of proper nutrients is critical to your overall health because they are crucial for fending off the ravages of aging. Some nutrients you may want to add to your daily regimen include:

- **CoQ10:** This energy-supplying nutrient is a powerful anti-aging antioxidant that your heart depends on for energy. It can help prevent, and in some cases reverse, heart disease. The Wellness Research Foundation has proved that CoQ10 levels can decline as much as 80% as you age, which makes it a reliable biomarker of age. Studies have linked this decrease in CoQ10 to a variety of diseases, but especially cardiovascular disease. A blood test can determine your levels, which are individually based. To boost your levels, eat grass-fed beef and eggs. For anti-aging benefits, you can supplement with 100 mg per day. If your level is found to be low, double the dose.
- **Vitamin C:** As an antioxidant, vitamin C helps prevent disease in addition to its immune-enhancing benefits. It aids adrenal hormone production, helps manufacture collagen (which in turn helps protect against infection and disease), and is involved in hundreds of other processes in your body. Take 1,000 mg twice a day.
- **Alpha Lipoic Acid (ALA):** A powerful antioxidant that supports the brain's energy-producing mitochondria, fends off oxidative stress, improves glucose metabolism, and helps manage blood sugar levels. Take 100 to 300 mg per day.
- **Resveratrol:** Another powerful antioxidant that has offered promising results in studies with lab animals: it enables cells to fend off oxidative stress,²⁴ strengthens muscles and reduces heart rate, and boosts endurance. Resveratrol has also been found to increase insulin sensitivity, allowing you to maintain your weight while avoiding diabetes. Take 20 to 50 mg daily. You can also get resveratrol through red wine, cranberries, bilberries, red grapes and blueberries.
- **Vitamin D:** Essential for a healthy immune system, regulation of hormones and mood, and for insulin receptors to work. It also cuts the risk of prostate, breast and colon cancer. It's a vitamin as well as a hormone. A deficiency can lead to impaired glucose metabolism, osteoporosis, and increased risk of atherosclerosis.²⁵ Take 400 IU daily.
- **Omega-3's:** Research continues to uncover an array of health-boosting benefits of these fatty acids. Studies have shown that it can significantly increase HDL "good" cholesterol levels.²⁶ Grass-fed organic beef is rich in omega-3s, as are flaxseeds, walnuts, pumpkin seeds and cold-water fish

such as salmon, mackerel, and sardines. You can also take an omega-3 supplement, but keep it in the freezer to prevent occurrence of an unpleasant “fish burp.”

Additional aging signs to attend to in rounding out your anti-aging plan

To round out your anti-aging plan, you’ll want to have the following physical signs of aging assessed so you can take the necessary steps to reverse them before they become permanent additions in your life.

Muscle: One of the first things you notice as you age is the loss of muscle tone, or how much you have to work to keep *any* tone. Muscle protects your body from aches and pains and other age-related ailments, as well as helping you remain steady on your feet and avoid dangerous falls.

Unfortunately, you begin to lose muscle at age 30, at an average rate of 3 pounds every 10 years. Your weight could potentially stay the same and you won’t even recognize the change—but that’s unfortunately because you’ve probably gained that weight back in the form of fat cells.

An ongoing study called the Evergreen Project is taking a look at the effects of muscle on the aging process. Results so far show that participants with more muscle have longer life spans, better cognitive function and fewer illnesses.²⁷

You can regain 100% of your muscle mass. High-intensity, short duration exercises work best to build muscle. Also, favor larger amounts of protein in your meal planning.

Fat: Another sign of aging is your body putting on padding, and you have to take action to prevent it. The best way to test how much body fat you have is through the Hydrostatic body fat test, in which you’re immersed in a tank of water and weighed. Check with local health clubs or hospitals to see if they have this option. If not, you can use calipers to measure body fat.

To maintain a youthful body fat range, men should aim for 10% to 14% body fat, and for women, aim for 15% to 25%.

The same things that work to build muscle offer double-duty when it comes to burning fat. The higher amounts of protein fuel muscle growth, and muscle burns more calories than fat. Also, those short bursts of intense exercise will burn fat the best. That’s because it burns energy from carbs stored in your muscles, and carbs burn energy at a higher rate. Then, as you’re recovering from the exercise and replenishing carbs (with those healthier carb choices), you’ll burn more fat for energy.

Bone loss: Loss of bone mass is a marker of aging. Adults lose 1% of bone mass each year. Have a bone mineral density test (BMD) done. The bones of your lower spine and hip should be tested, as these are at higher risk of fracture as you get older.

To boost your bone density and strength, perform weight-bearing exercises. These include walking, biking, swimming and weight training. Wherever you begin your program, focus on slowly working up the intensity of the exercise.

Also, you can help reverse the process of bone density loss by supplementing with vitamin D. Take 400 IUs per day.

Lung function: Your lung volume decreases with age, yet another marker of aging. But you can reverse this process. First, you should have a Pulmonary function test for capacity. Next, you'll already be on your way to reversing lung volume loss just through the high-intensity, short-burst exercise program you're setting in place to improve those other aging markers.

Heart capacity: Without proper attention, your heart capacity begins to decline as you get older, its ability to pump wearing down. Yet, it's another age marker that can be reversed—with just the proper time and attention. You can test your capacity yourself, using a method to test both your resting heart rate and your recovery heart rate.

Resting heart rate: Find your pulse in either your wrist or the side of your neck and count the beats over a 15-second interval. Take that number, times it by 4, and you have your resting heart rate. A normal adult will have a number that falls between 60 and 100 beats per minute (bpm). A well-conditioned athlete's will fall between 40 and 60 bpm.

Recovery heart rate: Walk around for a few minutes, then take your pulse. This is your normal activity heart rate. Next, do some type of cardio exercise, whether it's jogging in place or dancing, gradually increasing the intensity. Once you're at the peak of this intensity level, take your pulse again. Bring the intensity back to normal, then continue to take your pulse until it returns to what it was when you started at the normal activity rate. But watch the clock: the time between when you were at your peak and when you returned to normal is your recovery time. The more physically fit you are, the faster your heart rate will recover.

Now you can work on your heart capacity by working to get your heart rate within the target range for your age (which is 220 minus your age). Try for 60% of your maximum heart rate, and then gradually work up over the weeks to 80%.

The hope of anti-aging adherents

For anti-aging to take place, it requires nothing more drastic than some simple tests and some natural remedies that you can mostly implement on your own.

This is why it's so difficult for adherents of anti-aging to understand why conventional medicine has been so slow to accept the possibilities.

There is nothing radical involved with anti-aging, unless you consider a clean diet, exercise and proper nutrition to be fringe ideas. They're not. They're simply the best, most natural ways to bring balance to your body and answer the calls it sends to you in the form of symptoms. When your body speaks up and you get that feeling that something isn't right, by all means listen. And you don't need to wait around for symptoms to crop up. As you've seen, you can take steps immediately to have a hormone level work-up done and stop—and even reverse—aging in its tracks.

- ¹ Adly L, Hill D, Sherman ME, Sturgeon SR, et al. Serum concentrations of estrogens, sex hormone-binding globulin, and androgens and risk of breast cancer in postmenopausal women. *Int J Cancer*. 2006;119(10):2402-7.
- ² Kabat GC, O'Leary ES, Gammon MD, et al. Estrogen metabolism and breast cancer. *Epidemiology*. 2006;17(1):80-8.
- ³ Sitruk-Ware R. Progestogens in hormonal replacement therapy: new molecules, risks, and benefits. *Menopause*. 2002;9(1):6-15.
- ⁴ Jerry DJ. Roles for estrogen and progesterone in breast cancer prevention. *Breast Cancer Res*. 2007;9(2):102.
- ⁵ Reavley N. New encyclopedia of vitamins, minerals, supplements, and herbs. Lanham, Maryland: Bookman Press, 1998. p. 664.
- ⁶ http://www.ncbi.nlm.nih.gov/pubmed/17911176?ordinalpos=2&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_RVAbstractPlus
- ⁷ http://www.nhlbi.nih.gov/health/women/q_a.htm
- ⁸ American Cancer Society. http://www.cancer.org/docroot/NWS/content/NWS_1_1x_Number_of_Breast_Cancer_Cases_Drop.asp
- ⁹ Rudman et al. *New England Journal of Medicine*. 1990. 323:1-6
- ¹⁰ <http://jap.physiology.org/cgi/content/abstract/83/5/1756>
- ¹¹ <http://primev.com/Arginine.htm>
- ¹² Harley et al. "Telomeres shorten during ageing of human fibroblasts." *Nature*. 1990. (345):458–460.
- ¹³ Reavley N. New encyclopedia of vitamins, minerals, supplements, and herbs. Lanham, Maryland: Bookman Press, 1998. p. 106
- ¹⁴ National Center for Disease Control. <http://www.cdc.gov/ncipc/factsheets/adultfalls.htm>
- ¹⁵ http://www.ncbi.nlm.nih.gov/pubmed/18845400?ordinalpos=10&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
- ¹⁶ http://www.ncbi.nlm.nih.gov/pubmed/18848476?ordinalpos=9&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
- ¹⁷ <http://www.fi.edu/learn/brain/stress.html>
- ¹⁸ <http://www.fi.edu/learn/brain/stress.html>
- ¹⁹ Society for Neuroscience. http://www.sfn.org/index.cfm?pagename=publications_rd_alzheimers

²⁰ <http://www.sharpbrains.com/blog/2007/04/03/brain-exercise-faqs/>

²¹ [http://www.ncbi.nlm.nih.gov/pubmed/15713246?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=1&log\\$=relatedarticles&logdbfrom=pubmed](http://www.ncbi.nlm.nih.gov/pubmed/15713246?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=1&log$=relatedarticles&logdbfrom=pubmed)

²² <http://www.webmd.com/diet/news/20061103/exercise-fights-fatigue-boosts-energy>

²³ <http://www.webmd.com/diet/news/20061103/exercise-fights-fatigue-boosts-energy>

²⁴ http://www.ncbi.nlm.nih.gov/pubmed/18850202?ordinalpos=26&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum

²⁵ Reavley N. New encyclopedia of vitamins, minerals, supplements, and herbs. Lanham, Maryland: Bookman Press, 1998. p. 152.

²⁶ Reavley N. New encyclopedia of vitamins, minerals, supplements, and herbs. Lanham, Maryland: Bookman Press, 1998. p. 579.

²⁷ Fozard J, et al., Epidemiologists try many ways to show that physical activity is good for seniors health and longevity: review of special issue of the Journal of Aging and Physical Activity: The Evergreen Project. Exp Aging Res 1999; 25: 175-182