

Hormones of Youth

From conception into young adulthood, our bodies are flush with anabolic hormones, chemical messengers in the bloodstream which make tissues stronger. Among other things, these hormones play a vital role in building muscle and bone, providing energy, and increasing sex drive, urging us to procreate. The main anabolic hormones of youth are DHEA (dehydroepiandrosterone), human growth hormone, and testosterone. We'll discuss testosterone along with the sex hormones below, and, because of its important effect on promoting deep, youthful, restful sleep, we'll also discuss the sleep hormone, melatonin, in this section. Although levels of these hormones naturally decline as you age, you can take steps to replenish your supplies and maintain a more youthful balance.

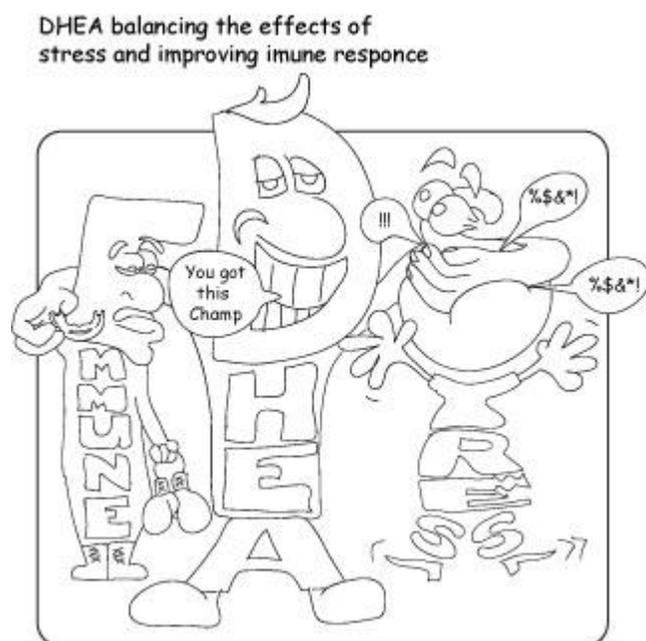
DHEA

Once thought to be just a component used in the production of other hormones, DHEA is now known to play a crucial role in a range of youth-promoting processes. However, as your years go up, your supply of DHEA goes down. By your late 20s, natural DHEA levels have already peaked and it's all downhill from there to about 50 percent of peak in your 40s and just 5 percent of peak levels in your 80s. But don't despair! Researchers have come up with some very interesting discoveries.

For example, studies published in 2002 in the *Journal of Gerontology: Biological Sciences*, and in 2003 in *Experimental Biology & Medicine*, found DHEA supplementation can slow some aging processes in lab animals. Higher DHEA levels have been found to correlate with lower risk of cardiovascular disease in men. As a precursor to other hormones such as testosterone, DHEA supplements have been shown to boost libido, particularly in women. DHEA helps your body convert food into energy and burn excess fat. A 2002 study published in

the *European Journal of Endocrinology* demonstrated the role of DHEA in lowering levels of IL-6 (interleukin-6) and TNF- α (tumor necrosis factor alpha), potent chemicals that can trigger inflammation in the body. When stress boosts your cortisol levels, which then depresses your immune system, DHEA can balance out the effects of cortisol and improve immune response. Some research has even pointed to possible uses for DHEA in cancer prevention or treatment because of its ability to inhibit uncontrolled cell growth.

With all those benefits, DHEA supplementation seems like a no-brainer. But not so fast!! Taking DHEA can't be approached in the same off-hand manner as popping a low-dose daily multivitamin. This is a potent hormone with potential side effects and more isn't necessarily better. You want to maintain optimal levels of DHEA in your system and that requires a bit of research. Prior to taking DHEA, you should have your current DHEA-S (DHEA-sulfate) level



tested. Ideal DHEA-S levels are about 200 – 250 for men and 150 – 200 for women. To reach those levels, men can start with 15 to 25 milligrams of DHEA per day, and women with 5 to 15 milligrams per day. After supplementing for 6 to 8 weeks, have your DHEA-S level checked again. You can adjust your dosage up or down as needed to achieve ideal levels.

Caution: Men must be especially careful when taking DHEA. As a precursor to testosterone, DHEA can increase your PSA (prostate-specific antigen), a key marker for prostate cancer. Before you start taking DHEA, have your PSA level checked. Then check it on a regular

basis (every 6 to 12 months) while you are taking DHEA. If your PSA level goes up, stop taking DHEA and talk with your doctor.

Human Growth Hormone

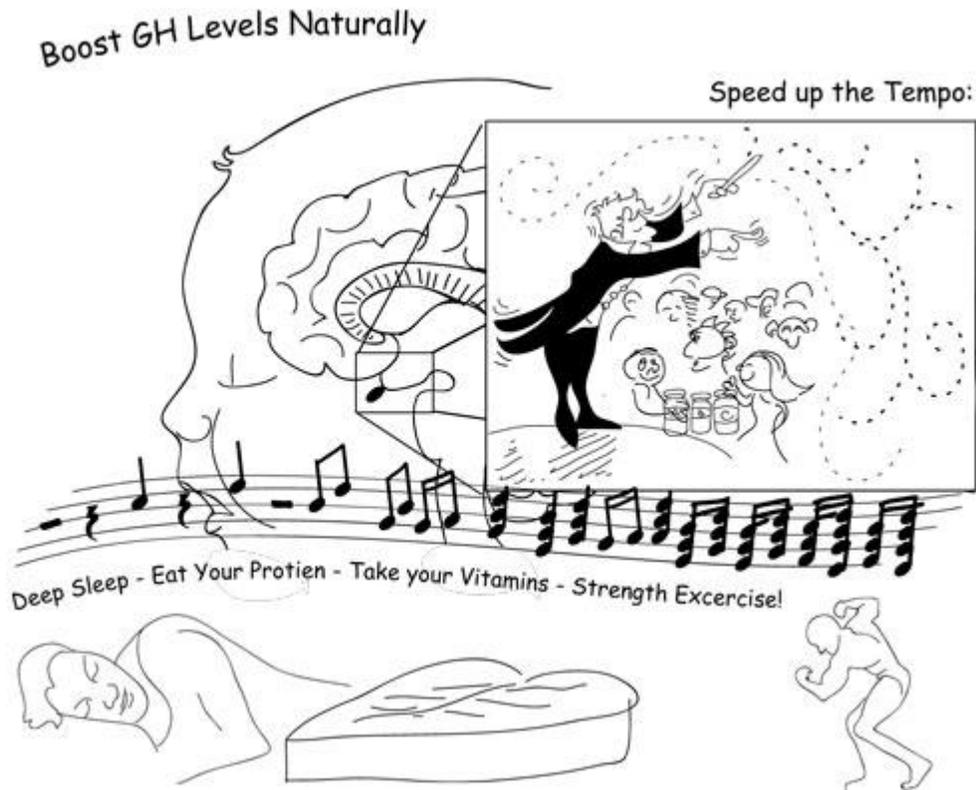
These days talk of human growth hormone (GH) conjures images of bulked up body builders and baseball stars who return from the off-season doubled in size from the previous fall. This is powerful stuff! Secreted by your pituitary gland, naturally occurring GH regulates your transition from infant to child to adolescent to adult.

Children and adults with GH deficiency syndrome have long been treated successfully with GH injections. In addition, numerous studies, many involving patients with GH deficiency, have confirmed the anti-aging power of GH. Research into GH has been intense, and a recent online search for the key words “growth hormone” found over *56 thousand studies*. The consensus of these studies is that GH injections can decrease body fat, increase muscle mass, strengthen bones, and lower blood pressure. GH supplementation can also improve cholesterol levels, lipid profiles, cardiovascular function, and the age-related decline in insulin sensitivity.

So what’s not to like? Simply put, costs, inconvenience and side effects. GH replacement therapy can set you back between \$5,000 and \$10,000 per year and most health insurance won’t cover GH except for specific conditions where other more cost-effective treatments are not available. GH therapy also requires daily injections, not something you’d want to add frivolously to your routine. Of most concern, however, are the serious adverse effects that can result from GH injections, including diabetes, glucose intolerance, carpal tunnel syndrome, aching joints, and edema. As regards cancer, the studies suggest that GH doesn’t cause cancer, but, as a powerful growth factor, it seems to stimulate the growth of existing tumors.

That leaves your GH levels dropping with each passing year and replacement therapy of questionable value when weighed against the costs and risks. Is there any way to reap the anti-aging benefits of GH without the downsides? Yes! By changing your lifestyle, you can boost your GH levels naturally:

- Deep sleep increases GH, so try to get a good night's sleep every night
- Exercise, particularly strength training, raises GH, so be sure to maintain a regular exercise routine that includes weight lifting
- Protein consumption increases GH production, while high-glycemic carbohydrates and sugars decrease it, so follow our recommendations for a low-sugar, low-glycemic-load diet
- The amino acids, arginine, glutamine, glycine, and ornithine stimulate the pituitary to secrete GH held in reserve, so consider supplementing with these if your levels remain low despite following the measures above
- Supplemental DHEA can also increase GH



Remember, however, that GH is a powerful hormone even when produced naturally in your own body. You want to achieve an ideal level, not just increase it indiscriminately. Before trying to raise your GH level, you should you test for your blood level of IGF-1 (insulin-like growth factor-1), a better indicator of GH in the body than GH itself because it provides an average value. Based on your age and gender, your physician can help you determine your optimal IGF-1 level and follow your progress with subsequent testing as you strive for a healthy balance of GH in your system.

Melatonin

The increasing number of TV commercials for sleep medications is a good indicator of the increasing number of people suffering from sleep disorders. Numerous studies in recent years have described an “epidemic” of sleep deprivation. For example, a 2002 National Sleep Foundation survey found that 47 million American adults were not getting adequate sleep with

grave consequences to individual health and significant costs to the economy from accidents and missed work. Prolonged sleep deprivation stresses the body and suppresses the immune system. But counting on over-the-counter or prescription sleep aids to get you through the night can bring its own set of problems, including dependence, sleep walking and daytime drowsiness.

Melatonin, a hormone produced in the pineal gland found in the recesses of your brain, is crucial to your ability to enjoy deep restorative sleep is. Triggered by the daily cycle of sunlight and darkness, melatonin levels start to rise in the evening, crest around midnight, and decrease toward morning so, ideally, you wake refreshed.

Just like the other Hormones of Youth, however, melatonin production drops with age. From peak capacity around age seven, levels decline steeply in your teens and continue to fall from there. By the time you reach 60, melatonin levels are half what they were in your 20s, so it's no wonder that around half of the U.S. population 65 and older complains of sleep disorders.

But there's more to melatonin than just regulation of sleep patterns. As a powerful antioxidant, studies indicate it may be of use in cancer treatment, in particular, breast cancer. And melatonin also plays a key role in the overall aging process. As levels decline over time, systems throughout your body respond to that reduction by also slowing down in a cycle that accelerates aging. Your immune defenses weaken and you become more susceptible to autoimmune disorders, infections, and cancer. Testosterone production declines in men. And in women, estrogen production falls off and the ovaries shut down with the onset of menopause. As your systems and organs decline, including your ability to secrete melatonin, the aging process gathers speed.

Sounds pretty grim, doesn't it? But all is not lost. The evidence suggests that you can slow the progression with melatonin supplements. As with all hormones, melatonin can be potent

and a little goes a long ways. Used exclusively for its anti-aging properties, we suggest taking 1 milligram in the sublingual form about one half hour before going to bed at night. Dosage can be increased to 3 milligram if well-tolerated. This should be all that is needed if you are in good health with no sleep concerns.

If you are having problems getting the rest you need, though, and want to avoid the use of prescription sleep medications, melatonin supplements may help you there, as well. A study of subjects over the age of 55 published in the *American Journal of Medicine* in 2004 found that melatonin replacement therapy significantly improved quality of sleep.

Melatonin taken sublingually (under the tongue) is particularly effective as a sleep aid because it is absorbed rapidly into the body. Between one and three milligrams taken just prior to bedtime should be sufficient in most cases. Melatonin has also been found to relieve symptoms of jet lag when traveling across time zones. Taking one to three milligrams at bedtime on the first few nights at your destination can help reset your body's internal clock to the new location.