Do You Need a Growth Hormone as an Adult?

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Despite claims that human growth hormone (HGH) can build muscle mass and strength in athletes and restore vitality and energy in the elderly, it is not the magic cure. Contrary to some common beliefs, HGH does not increase performance in athletes, and its side effects can be quite harmful to the elderly. However, there is a legitimate use of HGH for adults who have lost or have had damage to their pituitary gland, altering its ability to secrete this important hormone.

Key takeaways:

- HGH, secreted by the pituitary gland in the brain, maintains muscle and bone structure, fat metabolism, mood, and blood sugar.
- HGH replacement therapy is used for adults that have had their pituitary gland damaged or removed.
- Despite enticing promises of enhanced athletic performance or reversal of the signs of aging, researchers have found no significant evidence that either claim has any merit.
- The Food and Drug Administration (FDA) has approved HGH for replacement therapy in adults who

cannot secrete enough of their own due to issues with their pituitary glands.

- It is illegal to sell HGH in any form for off-label uses, including to enhance athletic performance or to diminish the signs of aging.

What is the human growth hormone?

Human growth hormone (HGH) promotes bone and cartilage growth in children until the growth plates in their bones fuse, and they can get no taller. In adults, HGH **helps maintain muscle mass and bone strength and regulates metabolism**. Additionally, it increases protein production, helps with fat metabolism, especially around the waist, and raises blood sugar levels by interacting with insulin and insulin-like growth factor-1.

HGH also **affects mood and physical performance** in adults. The pituitary gland, an endocrine gland located in the base of the brain below the hypothalamus, makes HGH. The production is controlled by other hormones in the hypothalamus, gastrointestinal tract, and pancreas. However, giving additional HGH to adults who have normal levels of HGH will not improve their strength or muscle mass.

HGH deficiency in adults

Human growth hormone deficiency is rare and usually occurs in childhood, characterized by a

delay in growth and reduced facial bone development. As we go through adulthood, our HGH levels naturally decline. However, we **do not treat the natural decline with synthetic HGH**, as its efficacy has not been proven. The main reason that HGH is given to adults is to treat HGH deficiency due to damage to the pituitary gland from tumors or the removal of the pituitary gland, radiation therapy to the pituitary gland, or infections, such as meningitis and head injuries. Damage to the pituitary gland and disruption of its ability to secrete HGH can have the following serious effects:

- Muscle and bone weakening
- Fat accumulation around the waist
- Fatigue
- Poor focus
- Anxiety or depression
- Weakening of the heart muscle
- Elevated cholesterol and increased risk of heart disease and stroke

Testing HGH levels

Human growth hormone is secreted in spurts, increasing after exercise, sleep, or suffering trauma. With HGH levels rising and falling throughout the day, getting an accurate HGH value from a one-time blood test is not likely. Therefore, doctors conduct a growth hormone stimulation test instead. This is done by injecting the amino acid arginine into a person's vein to elevate HGH levels. The test then measures the **pituitary gland's ability to**

secrete HGH in response to the arginine injection. Post-test side effects include sleepiness and dry mouth for up to 24 hours.

Treatment of adult-onset HGH deficiency

Adults deficient in HGH due to issues with the pituitary gland may receive injections of recombinant HGH. In 2020, Recombinant HGH is a protein manufactured to be almost identical to HGH that is naturally secreted by the body. The Food and Drug Administration (FDA) approved weekly, rather than daily, injections of recombinant HGH. These **injections help reduce symptoms** such as fatigue, anxiety, depression, and loss of muscle and bone mass.

However, the **injections produce side effects**, including headaches, joint pain, muscle aches, carpal tunnel syndrome, and swelling of the hands and feet are among the most frequent side effects. Additionally, HGH also **interferes with blood sugar metabolism** creating a risk of type 2 diabetes. Treatment with HGH is not recommended for adults with tumors, cancer, debilitating illnesses, significant breathing problems, or complications from open heart or abdominal surgery. People with diabetes must carefully monitor their blood sugar for elevations with HGH.

Excessive use of HGH will cause overgrowth and thickening of bones, especially those in the face, hands, and feet. Skin can also become thick, hairy, and coarse. Furthermore, **high doses of HGH can lead to serious side**

effects, such as high blood pressure, heart disease, and the growth of certain cancers.

Athletes doping with HGH

As we age, the levels of HGH naturally decrease, **leading some to believe that HGH can be used to restore** muscle and bone mass. As a result, some athletes have tried to build muscle mass and enhance performance by using synthetic HGH, **despite its ban by** the World Anti-Doping Agency, Major League Baseball, the National Football League, and the International Olympic Committee.

Researchers in California looked at 44 studies of HGH use in athletes. A group of 303 physically fit males, 27 years of age on average, received synthetic HGH injections, and 137 received placebos containing no HGH. The injections were given daily for 20 days. Athletes receiving the HGH injections **increased their lean body mass by 4.6 pounds**. However, this HGH-induced gain in **body mass did not correlate with improved athletic performance**. Neither strength nor the capacity for exercise increased in these male athletes. They were also more likely to have uncomfortable side effects, such as fluid retention, swelling, and fatigue, than those who received the placebo.

HGH as an aging cure

Human growth hormone has also been touted as the cure for aging and as a weight loss aid.

People are **looking for that magic cure** to improve the look of their skin, increase their energy, and stop osteoporosis as they age. A 1990 article in the New England Journal of Medicine asserted that HGH had improved muscle tone in 12 older men. That small study created a boom with some physicians selling HGH-based "Fountain of Youth" cures. Various forms of oral, injectable, and inhaled HGH have been advertised over the years as a way to slow down aging.

More recently, a 2021 review of the research on aging and HGH failed to find evidence that synthetic HGH has an anti-aging effect or decreases the risk of developing chronic diseases like heart disease or diabetes. Despite the evidence, some dietary supplements claim to boost HGH levels and come in pill form. The FDA considers HGH a controlled substance. To date, there are **no FDA-approved oral or inhaled forms of HGH**. The FDA has approved only injectable recombinant HGH to treat significant HGH deficiency. The use of HGH by athletes to build muscles and stamina or by older adults as an anti-aging supplement in any form is not FDA-approved and is considered illegal.

Without support in the research for the notion that HGH supplementation can improve strength and stamina, it appears that the best treatment for the natural decline of HGH is old-fashioned physical activity and strength training combined with a healthy diet and adequate sleep. The cost, side effects, and risks with such a plan are significantly less than with inappropriate treatment with synthetic HGH.

Resources:

1. Growth hormone deficiency and replacement therapy in adults: Impact on survival.

2. Effects of human growth hormone in men over 60 years old.

3. Growth hormone, athletic performance, and aging.

4. GH Replacement in the Elderly: Is It Worth It?.