

Growth hormone

The pituitary gland is a structure of the brain that produces different types of specialised hormones, including growth hormone. The roles of growth hormone include influencing an individual's height and contributing towards bone and muscle building. Natural levels of growth hormone fluctuate during the day and seem to be influenced by physical activity, for example, levels rise during exercise.

Synthetic growth hormone is used to help children with impaired hormone levels to reach their full height. However, there is a trade in black market growth hormone – particularly among athletes, bodybuilders and those whose positive body image depends on looking muscular.

Users take growth hormone in the mistaken belief that it will boost their muscle strength. However, any improvement in muscle strength is actually due to other muscle-building drugs commonly taken by athletes and bodybuilders, such as steroids.

How growth hormone works

Bones need sufficient amounts of growth hormone during childhood and adolescence in order to lengthen to adult proportions. Growth hormone prompts the liver to make a substance called insulin-like growth factor, or IGF-1. This and other similar compounds are involved in bone growth.

Children who lack sufficient natural growth hormone can grow to their full height if they take a synthesised hormone. Research suggests that a child with normal growth hormone levels, who takes the synthesised version, won't grow any taller than nature intended. Healthy children, given the synthesised version, are at risk of many disorders including an immune system reaction against growth hormone.

Acromegaly and growth hormone

Acromegaly is caused by an excess of growth hormone, which is most commonly caused by a pituitary tumour. It causes an irreversible overgrowth of bones, particularly those of the face, hands and feet. The skin is also affected and becomes thick, coarse and hairy. Other side effects include high blood pressure and heart disease.

Taking synthetic growth hormone over a period of time can also cause acromegaly. It is impossible for an adult to boost their height using synthetic growth hormone. The ends of the long bones (epiphyses) in the mature skeleton are fused. High doses of growth hormone can only thicken the bones rather than lengthen them. Any increase in muscle size is actually due to an increase in connective tissue, which doesn't contribute to muscle strength.

Creutzfeldt-Jakobs disease (CJD)

Growth hormone used to be harvested from the pituitary glands of cadavers. It was then discovered in some countries, but not Australia, that a progressive and incurable disease of the brain called Creutzfeldt-Jakobs disease (CJD) could sometimes be transmitted by this method. CJD is believed to be caused by a transmissible agent called a prion. It results in dementia and death.

Other drugs commonly used

An athlete or bodybuilder who abuses growth hormone in an attempt to gain muscle size and strength is likely to use other drugs to speed up their physical transformation. The dangers of mixing these drugs aren't fully known.

Some of the drugs used may include:

- **Steroids** – synthetic versions of the male sex hormone testosterone that build muscle tissue and aid rapid recovery
- **Amphetamines** – to aid in fat loss
- **Beta-blockers** – to counteract trembling, a common side effect of steroids
- **Diuretics** – to counteract fluid retention.

Type of help available

Children who are experiencing stunted or slowed growth need their natural growth hormone levels checked by medical professionals before any drugs are administered. A healthy child with normal growth hormone levels can suffer unwanted and serious side effects if synthetic hormones are taken without medical advice.

Giving up synthetic growth hormone can be extremely difficult for adults whose positive body image depends on looking large and muscular. Some users continue to take the drugs even though their health and wellbeing are affected. Treatment options include counselling.

See your doctor for information and referral or contact an alcohol and other drug service in your area.

Where to get help

- Your doctor
- Endocrinologist (your doctor can refer you)
- Alcohol and other drug service
- Australian Pituitary Foundation Tel. 1300 331 807

Things to remember

- Growth hormone is produced by the brain's pituitary gland and governs height, bone length and muscle growth.
- Some people abuse synthetic growth hormone in the mistaken belief it will help them increase muscle size and strength.
- Unwanted side effects of the drug in adults include an irreversible condition called acromegaly, which is the overgrowth of bones in the face, hands and feet.

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