



## hGH production as men age

Human growth hormone (GH) peaks in late teens/early 20s in men, then declines steadily through adulthood, contributing to typical age-related changes in muscle, fat, bone, and energy levels.<sup>[1] [2] [3]</sup>

### How production changes with age

- GH secretion peaks around puberty and early adulthood, with daily secretion roughly 1.0–1.5 mg/day (about 150 µg/kg/day) in pubertal boys.<sup>[2] [1]</sup>
- After about age 25–30, GH output declines progressively, often estimated at roughly 14–15% per decade of adult life.<sup>[4] [1] [2]</sup>
- By around age 55–60, average 24-hour GH secretion can fall to about one-sixth of pubertal levels (around 25 µg/kg/day), and many men over 60 meet biochemical criteria for functional GH deficiency.<sup>[1] [2] [4]</sup>
- Circulating IGF-1, the main downstream mediator of GH, also declines with age, and a substantial proportion of healthy men over 60 have IGF-1 levels below the reference range of younger adults.<sup>[5] [6] [7]</sup>

### Why it declines

- The hypothalamus tends to produce less growth hormone–releasing hormone (GHRH) and ghrelin with age, while producing more somatostatin, which inhibits GH release.<sup>[1]</sup>
- Receptor density for GH-releasing signals in the brain appears to decrease, so the pituitary is less responsive to normal stimulatory cues.<sup>[2] [1]</sup>
- Sleep becomes more fragmented with age, and because most GH is secreted in deep sleep, poorer sleep architecture reduces pulsatile GH release.<sup>[8] [1]</sup>

### Effects on the body

- Lower GH/IGF-1 is associated with reduced lean muscle mass and strength, increased fat mass (especially central/visceral fat), and reduced bone density in older men.<sup>[5] [2] [1]</sup>
- These changes contribute to sarcopenic obesity, frailty, thinner skin, and reduced physical performance in later life.<sup>[9] [10] [5] [1]</sup>
- Observational work links low IGF-1 in older age with greater frailty, worse nutrition, cognitive decline, and higher mortality risk, although causality is complex.<sup>[6] [7]</sup>

## Treatment and lifestyle context

- Pharmacologic GH replacement in older men with low IGF-1 can increase lean body mass and decrease fat mass, but it also carries risks (edema, joint pain, glucose intolerance, possible cancer concerns) and is not recommended as a general “anti-aging” therapy. <sup>[11]</sup> <sup>[10]</sup> <sup>[9]</sup> <sup>[5]</sup>
- Guidelines emphasize addressing lifestyle factors that naturally support GH/IGF-1 axis: adequate sleep, regular resistance and high-intensity exercise, healthy weight, and managing other hormones and metabolic risk factors. <sup>[11]</sup> <sup>[2]</sup> <sup>[1]</sup>

If you share your age and goals (performance, body composition, longevity, etc.), I can outline what this decline likely means for you specifically and what evidence-based steps are worth focusing on.

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1. <https://www.ncbi.nlm.nih.gov/books/NBK279163/>
2. <https://www.sciencedirect.com/science/article/abs/pii/S1521690X13000535>
3. <https://londonandrology.com/how-mens-hormones-change-with-age/>
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6. <https://www.aging-us.com/article/100071/text>
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11. <https://www.mayoclinic.org/healthy-lifestyle/healthy-aging/in-depth/growth-hormone/art-20045735>
12. <https://huddlemenshealth.com/blog/medical-treatments/hgh-for-men/>
13. [https://my.clevelandclinic.org/health/diseases/23343-growth-hormone-deficiency\\_ghd](https://my.clevelandclinic.org/health/diseases/23343-growth-hormone-deficiency_ghd)
14. <https://nymag.com/article/2016/06/men-are-turning-to-hgh-to-look-and-feel-younger.html>
15. <https://academic.oup.com/jcem/article-pdf/37/1/11/10520489/jcem0011.pdf>