

# Research debunks bodybuilding myth: Growth-promoting hormones don't stimulate strength

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New research from scientists at McMaster University reveals exercise-related testosterone and growth hormone do not play an influential role in building muscle after weightlifting, despite conventional wisdom suggesting otherwise.

The findings indicate that [bodybuilders](#) who look to manipulate those hormones through [exercise routines](#) are wasting their time.

In two separate studies, published in the *Journal of Applied Physiology* and the *European [Journal of Applied Physiology](#)*, researchers found anabolic hormones—long thought to be essential for building a muscular frame—do not influence muscle protein synthesis, the process that leads to bigger muscles.

"A popular mindset for weightlifters is that increased levels of hormones after exercise play a key role in building muscle," explains Daniel West, lead author of both studies and a graduate student in the Department of Kinesiology at McMaster. "That is simply not the case."

In the first study, researchers examined the responses of both male and female participants to intense leg exercise. Despite a 45-fold difference in testosterone increase, men and women were able to make new muscle protein at exactly the same rate.

"Since new muscle proteins eventually add up to muscle growth, this is an important finding," says West.

"While testosterone is definitely anabolic and promotes muscle growth in men and women at high doses, such as those used during steroid abuse, our findings show that naturally occurring levels of testosterone do not influence the rate of muscle protein synthesis."

In the second study, researchers analyzed the post-exercise hormonal responses of 56 young men, aged 18 to 30, who trained five days a week for 12 weeks in total.

The men experienced gains in muscle mass that ranged from virtually nothing to more than 12 pounds, yet their levels of testosterone and growth [hormone](#) after exercise showed no relationship to muscle growth or strength gain.

Surprisingly, the researchers noted that cortisol—considered to have the opposite effect of anabolic hormones because it reduces protein synthesis and breaks down tissue—was related to the gain in muscle mass.

"The idea that you can or should base entire exercise training programs on trying to manipulate testosterone or [growth hormone](#) levels is false," says Stuart Phillips, a professor in the Department of Kinesiology. "There is simply no evidence to support this concept."

**More information:** A copy of study published in the *European Journal of Applied Physiology* can be found at: [www.springerlink.com/content/2...751g19l/fulltext.pdf](http://www.springerlink.com/content/2...751g19l/fulltext.pdf)

A copy of the paper published in the *Journal of Applied Physiology* can be found at: [jap.physiology.org/content/112/11/1805](http://jap.physiology.org/content/112/11/1805)

Provided by McMaster University

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