

THE STUDY



Free Testosterone Predicts Muscle and Strength Better Than Total Testosterone

A 2025 study measured 557 men and compared two ways of reading the same hormone. In older men, only one of them tracked muscle, strength and physical function.

Swipe

THE WORRY

•Your Testosterone Is Normal•

If you've been told that while you were quietly losing strength, this study explains how both things can be true at the same time.

THE SETUP

557 Men, Aged 23 to 92

Researchers split them into 326 younger men (65 or under) and 231 older men (over 65), then measured lean mass, grip strength, leg power and the 30 second sit-to-stand test directly, not by how the men said they felt.

WHY THE NUMBERS DIFFER

Bound Testosterone Does Nothing

Most testosterone in your blood is bound to sex hormone binding globulin, and it does nothing while bound. Only the small free fraction can enter a cell and act. SHBG rises with age, so total can look fine while the active fraction has fallen.

THE FINDING

Free Testosterone Tracked Muscle. Total Testosterone Didn't.

In older men, calculated free testosterone was linked to muscle index, lean mass, grip strength, leg power and sit-to-stand performance. Total testosterone was not, apart from one exception: leg power.

THE SHARPEST DETAIL

Adjust for Body Fat, and Total Testosterone's Link Vanishes

Once body fat was accounted for, total testosterone's tie to grip strength weakened past significance and its link to muscle index disappeared entirely. Free testosterone's associations held.

WHAT IT DOESN'T PROVE

Association, Not Cause

This was a snapshot in time, so it can't say raising free testosterone builds muscle. It was cross-sectional, and this signal showed up in older men, not younger ones.

THE BOTTOM LINE



A Normal Total Doesn't Close the Question

If you have symptoms and a normal total testosterone result, asking to have free testosterone calculated is a reasonable question for the doctor treating you.