

3.2.2.3.4 The theory of enhancing testosterone for better sexual function

Testosterone and estrogens are, to a certain extent, interchangeable. Estradiol, the most powerful of the estrogens, is metabolized in the body by the enzyme aromatase from testosterone. Furthermore, estrogens can occupy testosterone receptors. And depending on receptor sites, one and the same hormone can have quite opposing effects. The body furthermore possesses a full arsenal of weapons by which certain hormones can be rendered inefficient. They can be neutralized by proteins, and up and down regulated by other hormones.

Because our knowledge on the endocrine system is far from complete, many scenarios are possible by which intended results are not achieved.

You may, for example, supply exogenous testosterone, and much of it is converted into estradiol. You actually end up with a balance that is more tilted towards estrogen than it was when you started the supplementation.

Or you may overly inhibit aromatase, and then scientists find out that what is responsible for libido is not testosterone but specific hormonal receptor sites in the brain. According to such a hypothesis you would gain nothing from testosterone supplementation or aromatase inhibition. The task would have to be to properly activate those receptor sites, a task for which medications have not been developed.

The above two paragraphs are hypothetical scenarios intended to generate a feeling in the reader that the influence of hormones on libido and sexual function is sketchy, and we could be in for surprises.

The proof for the hypothesis that testosterone is the hormone of desire exists primarily as reverse evidence. If you inhibit testosterone, you can reliably kill libido.

Nevertheless, the key to a sexualized lifestyle probably is hormonal.

It's just that we don't have reliable information on how hormones determine libido and sexual function. Just one thing is clear: an exogenous supply of testosterone doesn't work by the following formula: a little bit more of exogenous testosterone = a little bit more libido and sexual function; much more of exogenous testosterone = much more libido and sexual function.

That would be too nice and easy to be true.

On the other hand, if you do nothing to interfere with hormonal processes, you can be sure that your libido will likely decline heavily long before you die of natural causes. If it's already largely gone, or clearly on the decline by the time you read this, you may as well experiment with hormonal modulators at this time, even though definite information does not yet exist.

Because the theoretical knowledge about the endocrine system is far from complete, an entirely clinical approach is best. Search for information on what has worked with others, not for theories why something particular should work. (It won't work because it should.)

Currently, your best bet for improving libido and (or by) raising testosterone is probably the Southeast Asian herbal tongkat ali (*Eurycoma longifolia* by its scientific, Latin name). This root has been used as an aphrodisiac in Southeast Asia and in Chinese medicine long before scientific studies conclusively have proven that it raises testosterone. Still, that tongkat ali is used as an aphrodisiac and that it raises testosterone does, strictly analyzed, not mean that it works as aphrodisiac because it raises testosterone. Herbal medications typically have dozens of active ingredients, many of which have not yet been studied at all. It may just be that one component of tongkat ali raises testosterone, and another one works as aphrodisiac.

Nevertheless, I think it's quite obvious that in order to have the sexuality of a 20-year-old at an age far beyond, we have to interfere with the hormonal system.

An initial guideline should be that if we want the sexual health of a 20-year-old, we should implement the hormonal mix of a 20-year-old. On the face of it, this would mean: higher testosterone, lower estradiol, less sex hormone binding globulin, less aromatase activity.

Current conventional wisdom indicates that what you primarily want if you are around 50 is more free testosterone.

To achieve higher testosterone levels, a few things have to be kept in mind.

First, the supplementation of pharmaceutical testosterone by itself will often not do the trick. There will be a tendency that exogenously supplied testosterone will not circulate long as free testosterone but will be bound to sex hormone binding globulin and hereby be rendered inefficient.

Furthermore, the body converts testosterone into estradiol, the strongest of all estrogens. ("Estrogen" is not the name of a hormone but of a group of hormones; the equivalent to estrogen is androgen, not testosterone; like estrogen, the term androgen is the name of a group of hormones; the equivalent to testosterone is estradiol).

The conversion of testosterone into estradiol is made by the enzyme aromatase, and the conversion can happen in many different kinds of tissue throughout the body.

There is a definite possibility that supplying the body with exogenous testosterone will not have the desired effect, even if it remains bioavailable (not bound to sex hormone binding globulin), because the body may just convert this testosterone into estradiol. The effect may then even be the opposite of what has been wished for, with the testosterone-estradiol balance more tilted towards the estradiol than has initially been the case.

Prior to testosterone supplementation, aromatase inhibitors should be tried.

They have the power to render ineffective the main culprit in estradiol overload in men, aromatase. The most specific aromatase inhibitor is anastrozole (Arimidex).

But not all testosterone deficiencies are caused by too much aromatase activity. It could just as well be that the Leydig cells in the testicles are not sufficiently stimulated to produce enough

testosterone. To stimulate the production of more endogenous testosterone may still be preferential to supplying exogenous testosterone, which often will not have the desired libido-enhancing effect.

The body's own synthesis of testosterone begins deep in the brain, in the hypothalamus. The hypothalamus secretes the gonadotropin-releasing hormone.

This hormone stimulates the pituitary gland to release yet another hormone, luteinizing hormone. This luteinizing hormone stimulates the Leydig cells in the testicles to produce testosterone. In women, it stimulates the ovaries.

The hypothalamus and pituitary gland are not gender specific. And there are a number of drugs that can be used to stimulate the hypothalamus. Clomiphene citrate (Clomid), for example. In women, the medication is used to induce ovulation, and thereby fertility. So fertile do women become on Clomid that roughly one out of 10 pregnancies is for twins.

Body builders who have shut down their own testosterone production by heavy use of anabolic steroids use Clomid to get their testosterone production started again, and, according to common claims, it works quite reliably to this effect.

Clomiphene citrate is a receptor specific hormone modulator. It doesn't only have the cited effect on the hypothalamus but also has anti-estrogenic properties in being a very weak estrogen. By binding on estrogen receptor sites, clomiphene citrate prevents the stronger estradiol from occupying these receptors.

Alas, while the above elaborations on clomiphene citrate suggest that it should work fine to raise testosterone and enhance libido, scientific studies time and again have proven that this drug does not improve libido.

While tongkat ali extract has been shown to be the only medication to have the double effect of raising testosterone and improving libido, there are also a few reliable, non-pharmaceutical methods to boost testosterone (and maybe even libido):

1. Lose weight. Fat cells produce aromatase, which converts testosterone into estradiol, thus keeping the testosterone balance low.
2. Exercise. A balanced program of daily exercise raises testosterone levels.
3. Engage in sexual activity. It has firmly been established that men who have sex more often will thereby raise their testosterone levels.

Whether the three above-mentioned steps will drastically increase libido is less certain. Or rather, it's quite obvious that it's not the grand solution we have been looking for. Enough 20-year-olds who are living a very sedate lifestyle don't have problems with their libido. And enough 50-year-olds who exercise still don't get their libido back on track.