



## TESTOSTERONE AND ANABOLIC STEROIDS

### Summary

Testosterone is a hormone naturally produced by the body. Low levels of testosterone can cause symptoms of fatigue, malaise, loss of sex drive, and loss of muscle tissue. These symptoms can often be treated with synthetic testosterone. Anabolic steroids are compounds related to testosterone. Using synthetic testosterone or anabolic steroids may help people with HIV-related wasting gain weight, especially muscle mass.

### What is testosterone?

Although it is usually thought of as a male hormone, women's bodies also make testosterone, but at much lower levels than men's. Testosterone has two different effects on the body: *anabolic* effects which promote growth and muscle building, and *androgenic* effects which develop the male sex organs and secondary sex characteristics such as deepening of the voice and growth of facial hair.

### What are anabolic steroids?

Anabolic steroids are synthetic compounds that resemble the natural hormone testosterone. Makers of anabolic steroids change the testosterone molecule slightly to change the balance of androgenic and anabolic effects, which can allow these drugs to build muscle with fewer masculinizing effects.

### How are these drugs used?

#### 1. To treat hypogonadism

Sometimes HIV-positive men develop low testosterone levels which can cause symptoms of fatigue, muscle wasting, low (or no) sex drive, impotence, and loss of facial or body hair. This condition is called hypogonadism. Hormone replacement therapy with synthetic testosterone may help to relieve those symptoms.

HIV-positive women may also develop low testosterone levels and experience symptoms of fatigue, loss of sex drive, and a decreased sense of well-being. Because the androgenic (masculinizing) effects of testosterone and anabolic steroids can be permanent, researchers have been cautious about studying these drugs in women.

#### 2. To treat weight loss

Anabolic steroids can be used in order to build muscle mass and improve strength and endurance. They can increase the body's own ability to use protein to make muscle. Anabolics work best when combined with a high-protein diet and regular strength training.



## Dosage

Testosterone, whether taken orally or by injection into muscle, is metabolized (broken down) very quickly and efficiently by the liver. New testosterone patches can be applied to the skin, allowing the hormone to be released slowly. Manufacturers of anabolic steroids change the testosterone molecule slightly so that their products are metabolized much more slowly, allowing the effects to last longer with less frequent dosing.

The use of anabolic steroids can raise blood levels of testosterone well above a person's normal range. As a result, the body may try to regulate testosterone levels by shutting down its own production of testosterone. In order to prevent this, people usually use anabolics in cycles of a few weeks on and then off.

The dosage and cycle should be decided in consultation with a physician. Short cycles (6-8 weeks) are often the most beneficial, in order to minimize potential side effects and maximize potential benefit. Often the most muscle gain occurs in the first month of the cycle.

## Side effects

Many of the unwanted side effects of testosterone and anabolic steroids come from their androgenic properties. These drugs can raise blood levels of testosterone, causing side effects which vary from person to person.

The most common side effects in both men and women include increased facial and body hair, oily skin or acne, male pattern baldness, water retention, joint stiffness, and soreness at the injection site. Lab tests may show increased levels of liver enzymes. A deepened or hoarsened voice, growth of the clitoris, and menstrual irregularities have been reported in women. The masculinizing side effects may be irreversible in women, even with short term use.

At higher doses over longer periods, increased or decreased sex drive, mood swings, aggressive behaviour, persistent painful erections, shrinking testicles, and breast growth have been reported in men. Long term

use of high dose anabolics can damage the liver, causing jaundice, hepatitis, bleeding, or, possibly, cancer.

## Products

**testosterone cypionate** (sold as Depo-Testosterone Cypionate)

The effect of Depo-Testosterone Cypionate is sustained longer in the body than anabolic steroids. A single injection of 200-400mg is given once every 2-4 weeks, then a rest period of 4 weeks, followed by another injection once every 2-4 weeks.

**transdermal testosterone** (the "patch")

Testosterone patches allow a slow, steady release of the hormone into the body. The Testoderm patch is applied daily to a man's shaved scrotum. The newer Androderm patch can be applied daily to the upper arms, back, thighs, or abdomen.

Miller and colleagues conducted a 12-week pilot study of an experimental low-dose testosterone patch for women. Fifty-three HIV-positive women who had lost about 10% of their normal body weight, and whose blood levels of testosterone were below the normal reference range took part in the study. They were randomly assigned to receive either a placebo patch, a patch releasing 150 micrograms of testosterone daily, or a patch releasing 300 micrograms of testosterone daily. Although the patches restored testosterone levels to normal, only the women who had used the 150 microgram patch gained weight. Unfortunately, all of the weight gained was fat, not muscle mass.

**nandrolone decanoate** (sold as Deca-Durabolin, hybolin decanoate)

Deca-Durabolin is probably the most popular anabolic used in the treatment of HIV-related weight loss. It has a low rate of side effects and a high anabolic effect. The drug is given by injection into a muscle, at doses ranging from 50-200 mg, every 2-4 weeks for up to 12 weeks. After four weeks off drug, another



cycle of treatment can be started. The androgenic side effects of Deca-Durabolin are much milder than those of testosterone.

At doses of up to 100 mg every 3-4 weeks for up to 12 weeks, women may be able to use this drug. If any changes in menstrual periods occur, the drug should be stopped until the cause of such changes is discovered.

### **oxandrolone (Oxandrin)**

This is an oral anabolic steroid available through the Special Access Programme (formerly EDRP) of the Health Protection Branch of Health Canada. The androgenic effects are very low and side effects are few. The dosage for men is generally 15-40 mg daily and for women 5-20 mg daily.

## **Caution**

“Street steroids” that can be purchased at some gyms may be harmful at worst, and at best a waste of money. Often these products contain no anabolics at all, with the active drug being replaced by vegetable oil. Besides the potentially dangerous effects from an unknown substance, there is also an increased risk of infection of HIV and hepatitis B from needle sharing.

## **Credits**

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## **References**

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**Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about HIV-related illness and the treatments in question.**

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