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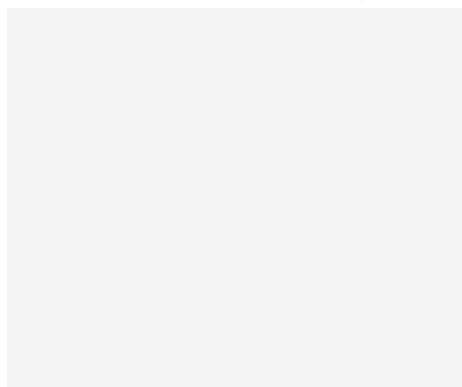
Anabolic Steroids

Medically reviewed on May 4, 2014 by L. Anderson, PharmD.

What are Anabolic Steroids?

Androgens and anabolic steroids include the endogenous male sex hormone testosterone and dihydrotestosterone, and other agents that behave like these sex hormones. Androgens stimulate the development of male sexual characteristics (such as deepening of the voice and beard growth) and development of male sex organs. Anabolic steroids stimulate growth in many other types of tissues, especially bone and muscle. Anabolic effects also include increased production of red blood cells.

A D V E R T I S E M E N T



Medically, androgens and anabolic steroids are used to treat:

- **delayed puberty** in adolescent boys
- **hypogonadism** and impotence in men
- **breast cancer** in women
- anemia
- **osteoporosis**
- weight loss disease in HIV
- **endometriosis**
- other conditions with hormonal imbalance

Anabolic steroids can be given by injection, taken by mouth, or used externally. In the U.S. they are classified as **Schedule III Controlled Substances** due to the possibility of serious adverse effects and a high potential for abuse.

Are Anabolic Steroids Prohibited in Sports?

Some athletes may **abuse anabolic steroids** to build muscle, prolong endurance and enhance performance. Anabolic agents are prohibited at all times, both in- and out-of-competition in collegiate and professional sports and appear on both the World Anti-Doping Agency (WADA) and U.S. Anti-Doping Agency (USADA) **Prohibited Lists**. Anabolic steroid use is also prohibited by the International Olympic Committee (IOC) as well as the National Collegiate Athletic Association

(NCAA).^{1,2}

Anabolic steroids include all synthetic derivatives of testosterone, both oral and injectable. Examples of anabolic steroids include testosterone, methyltestosterone, danazol, and oxandrolone. Anabolic steroids are performance-enhancing agents and act by increasing lean muscle protein synthesis and body weight, without increasing fat mass.³

What is the Extent of Illicit Anabolic Steroid Use in the U.S?

Illegal use and street purchase of anabolic steroids is risky. Illicit steroids may be sold at gyms, sporting competitions, and via mail order, and buyers may be at risk of purchasing adulterated or contaminated products. Often, illicit steroids are smuggled into the U.S. from countries that do not require a prescription for the purchase of steroids. Steroids may also be illegally sourced from U.S. pharmacies or synthesized in backroom laboratories. Common street names that are used to refer to anabolic steroids may include:

- Juice
- Gym candy
- Pumpers
- Andro
- Stackers

Abuse of anabolic steroids can occur in any age group, but statistics on their abuse is difficult to quantitate because many surveys on drug abuse do not include steroids. According to the National Institute on Drug Abuse (NIDA), scientific evidence indicates that anabolic steroid abuse among athletes may range between one and six percent.² The NIDA-funded Monitoring the Future study from 2011 showed that 0.5% of 8th graders, 0.9% of 10th graders, and 1.3% of 12th grade males had abused anabolic steroids at least once in the year prior to being surveyed; among females, the rates were 0.5%, 0.7%, and 0.1%, respectively.⁵ **Laboratory drug testing** can usually detect the presence of anabolic steroids, and athletes in higher level sports are frequently monitored for abuse of a large number of drugs, including steroids.

Steroidal dietary supplements can be converted into testosterone or other androgenic compounds in the body. Steroidal over-the-counter dietary supplements such as androstenedione and **tetrahydrogestrinone (THG)** were previously available without prescription through health food stores, however, these supplements are now illegal after amendments to the Anabolic Steroid Control Act of 2004.³ Dehydroepiandrosterone (DHEA), another steroidal dietary supplement is still available legally; however, it does appear on the U.S. Anti-Doping Agency's list of prohibited agents for both in- and out-of-competition. Clinical research reports indicate that these agents are ineffective or lack evidence of performance-enhancing effects.^{3,4}

What are the Most Common Side Effects That May Occur with Anabolic Steroid Use?

There is a wide array of serious **side effects** associated with abuse of anabolic steroids.⁴ Steroid use can alter the normal hormonal production in the body. Most side effects can be reversed if the drugs are stopped, but some, such as a deepened voice in women may persist. Data on long-term side effects primarily come from case reports and not from well-controlled, long-term epidemiological studies, which might be reliable.⁴ Common side effects with anabolic steroids may include:

- Severe acne, oily skin and hair
- Hair loss
- **Liver disease**, such as liver tumors and cysts
- **Kidney disease**
- **Heart disease**, such as heart attack and stroke

- Altered mood, irritability, increased aggression, depression or suicidal tendencies
- Alterations in cholesterol and other blood lipids
- High blood pressure
- **Gynecomastia** (abnormal development of mammary glands in men causing breast enlargement)
- Shrinking of testicals
- Azoospermia (absence of sperm in semen)
- Menstrual irregularities in women
- Infertility
- **Excess facial or body hair**, deeper voice in women
- Stunted growth and height in teens
- Risk of viral or bacterial infections due to unsterile injections

Are Anabolic Steroids Addictive?

Users of anabolic steroids can become both physically and psychologically dependent upon the drugs, as evidenced by a drug-seeking behavior, continued use even with adverse effects, and physical withdrawal symptoms such as mood swings, fatigue, restlessness, loss of appetite, insomnia, reduced sex drive, and steroid cravings. Severe withdrawal can lead to depression and possible suicide. Depressive symptoms can persist for up to one year after the user stops taking the steroid.⁴

Supportive treatments and medication interventions may be needed for severe anabolic addiction. Medications that have been used for treating anabolic steroid withdrawal allow the natural hormonal system to restore. Other medications target specific withdrawal symptoms. For example, antidepressants may be prescribed to treat depressive episodes and **analgesics**, such as acetaminophen or ibuprofen, may be used for headaches and muscle and joint pains. Some patients may also undergo behavioral therapies.⁴

What is Being Done to Combat Anabolic Steroid Abuse?

Awareness and educational efforts are working to help prevent anabolic steroid abuse in schools and communities. The Adolescents Training and Learning to Avoid Steroids (ATLAS) and the Athletes Targeting Healthy Exercise and Nutrition Alternatives (ATHENA) programs, funded by the NIDA, and supported by the Oregon Health & Science University programs is teaching athletes that they do not need steroids to build powerful muscles and improve athletic performance. These programs provide weight-training and nutrition alternatives, increase healthy behaviors, less likelihood to try steroids, and less likelihood to engage in other dangerous behaviors such as drinking and driving, use of **marijuana** and **alcohol**, and and improved body image. Both Congress and the Substance Abuse and Mental Health Services Administration endorsed these model prevention programs.⁴

See Also

- [Blood Doping: Lance Armstrong & Pro Cycling](#)
- [Can a Drug Screening Test Lead to a False Positive?](#)
- [Drug Testing FAQ's](#)
- [Toxicology Drug Testing](#)

Sources

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