

Substance Abuse Treatment

ADVISORY

News for the Treatment Field

June 2006
Volume 5
Issue 3

ANABOLIC STEROIDS

Recent events, especially in professional sports, have triggered increased media coverage and congressional hearings on anabolic steroid use. Awareness is growing that steroid use can cause significant physical and mental harm and may be life threatening. Some studies have identified steroids as gateway drugs to other substance use, including opioids.¹ People who inject steroids risk diseases passed by needle sharing. Substance abuse treatment programs are logical resources for steroids education and treatment, but most are not well informed. Providers may believe that steroids are not addictive or the effects self-correct after stopping. Programs may lack guidelines for screening, assessment, and treatment.

What are anabolic steroids?

Anabolic steroids—more specifically anabolic-androgenic steroids (AAS)—are synthetic compounds that have muscle-building (anabolic) and masculinization (androgenic) effects. Medical uses include prevention of tissue wasting in some diseases. People also use AAS to boost athletic performance or look more muscular. The Drug Enforcement Administration (DEA) categorizes AAS as schedule III controlled substances (substances with accepted medical uses, which may cause moderate or low physical dependence or high psychological dependence). The Anabolic Steroid Control Act of 2004 lists 59 AAS. Although controlled, AAS are relatively easy to obtain.² The number of people abusing AAS nationwide is unknown.³ The last comprehensive survey of AAS use in the United States was in 1994. The 2004 Monitoring the Future report noted declining adolescent AAS use in grades 8 and 10 but not among 12th graders.⁴

Can AAS use cause dependence?

Evidence is growing that some people lose control of AAS use. One review documented at least 165 cases that met dependence criteria.⁵ Many people cycle on and off AAS and combine them with other AAS or supplements

(known as pyramiding and stacking) to control AAS effects and avoid tolerance. Those who lose control of AAS cycles may develop neuroadaptations in brain reward systems, which cause craving or withdrawal symptoms on discontinuation. These symptoms compel them to increase dosage or shorten periods of nonuse until they may use daily for months at a time. Such individuals need specialized treatment to stop using AAS.⁶

What are AAS-related behavioral, psychological, and physical disorders?

AAS use has been linked to severe mental disorders, including mania, depression, suicidality, and psychoses. High AAS dosages can cause uncontrolled anger or combative behavior (“roid rage”). These episodes may be manifestations of an AAS-induced hypomanic syndrome, which begins with feelings of invincibility and worsens as dosages increase. Some people using AAS experience a body dysmorphic disorder (BDD) called muscle dysmorphia, the obsessive belief that they are not adequately muscular or “chiseled.” Some people start using other drugs to ease mood swings or conditioning pain. For example, they may add an opioid analgesic such as nalbuphine to their AAS regimen and progress to pure opioids.¹ These individuals often learn about illicit drugs from other people who use AAS and buy their drugs from the people who sell them AAS. Psychological barriers to injection have been breached by AAS use, so injecting other drugs may seem like a small step. Reports exist, for example, of people who used AAS and then developed opioid addiction. In one study of 227 men admitted to opioid addiction treatment, 21 (9%) reported beginning their substance use with AAS.⁷ Significant physical harm has been linked to long-term use, including damage to liver, heart, and sexual organ systems.³ Adolescent AAS use has been linked to stunted growth, usually permanent.³ Needle injection increases risk of blood-borne diseases.³



How should treatment providers screen and assess AAS use?

Treatment providers should screen for AAS use in muscular clients. During screening, providers should look for visual or behavioral “red flags” of AAS use.

If any red flags are present, the provider should ask⁶—

1. About athletic or fitness activities. Young males who lift weights are at greatest risk to use AAS.
2. About use of mail-order or over-the-counter supplements (e.g., protein shakes, creatine, dehydroepiandrosterone [commonly called DHEA]). Use of supplements is commonly associated with AAS use.
3. Whether the client knows anyone who has tried AAS.
4. Whether the client has tried or thought about trying AAS.

If the client admits AAS use, the provider should note it. Then ask the following:

- What are the client’s perceptions of AAS benefits and consequences?
- What are the dates of first and last use, AAS names and dosages, sources (e.g., prescription diversion, veterinary sources, Internet), routes of administration, and use patterns?
- What measures are taken to avoid detection?
- Is there depression during withdrawal periods? How severe? How does the client cope?
- Has the client used other drugs to augment AAS effects, reduce side effects, or mask use?

During physical assessment, physicians should look for needle marks in large muscles (gluteals, thighs, deltoids). Men may present with enlarged breasts and/or testicular atrophy. Male pattern baldness, excessive hair, hypertension, enlarged liver or prostate, right upper-quadrant abdominal pain, and jaundice are possible. Although women are much less likely to use AAS, some women who use AAS develop excessive hair and a deepened voice. Urinalysis must be at a laboratory that can test for AAS. Standard urine tests do not screen AAS, particularly variants produced to elude drug tests. However, standard tests should be ordered as well, given the association of AAS with other substance use. Blood testosterone levels may be grossly depressed because AAS inhibit endogenous testosterone production.

“Red Flags” for AAS Use

- Very low body fat, extreme muscularity, disproportionately large upper torso
- Acne on face, shoulders, back
- Pigmented striae on skin
- Excessive facial or body hair
- Superficial confidence; feelings of invincibility or grandiosity
- Restlessness, anxiety, guardedness
- Frustration or excessive argumentativeness to the point of rage
- Obsession with weight training, conditioning, body image, appearance
- Dissatisfaction with appearance despite what others perceive
- Extremely baggy or loose clothing

How are AAS use and its effects treated?

- The treatment plan needs to address all substances being used.⁸
- Counselors should acknowledge the muscle development ability of AAS, while emphasizing AAS risks. To achieve credibility, counselors need to understand the body-building lifestyle, how AAS are used, and AAS slang. Clients are likely to be very educated about using AAS to achieve specific body building or muscle strengthening goals. They are unlikely to perceive AAS use as addictive.⁶
- Stopping AAS use reverses most physical and psychological changes—but not all. Voice deepening and other signs of masculinization in females may be irreversible. Stunted growth in adolescents is often permanent. Organ system damage may be irreversible. Prolonged sexual side effects may require hormonal therapy by an endocrinologist. The client should be advised about and tested for blood-borne diseases.^{3,6}
- Depression is common during AAS withdrawal, typically easing without medication after several weeks. Severe depression may lead to suicidal ideation.³ Clients with severe depression should be treated by mental health professionals. Severe or persistent symptoms respond to selective serotonin reuptake inhibitors such as fluoxetine, which is also effective for BDDs.⁶

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- Manic symptoms usually remit when AAS use is stopped. Temporary treatment can include neuroleptics or other antimanic drugs. If a client has a history of mood disorders or manic/psychotic symptoms persist over 2 weeks, an underlying disorder should be investigated. Standard approaches such as cognitive-behavioral therapy are appropriate for AAS disorders.⁶
- The client may need to change lifestyles to maintain abstinence. This could entail switching gyms, workout friends, competitive events, and/or sports. Discussions of body image issues may be necessary. Counselors may need to refer clients to specialists who can help them develop healthy fitness regimens. Programs are advised to form strong relationships with experts in sports medicine for advice and referral.⁹

Notes

¹Kanayama, G., Cohane, B.A., Weiss, R.D., and Pope, H.G., Jr. Past anabolic-androgenic steroid use among men admitted for substance abuse treatment: An underrecognized problem? *Journal of Clinical Psychiatry* 64(2):156–160, 2003.

²Grassley, C. The Abuse of Anabolic Steroids and Their Precursors by Adolescent and Amateur Athletes. Opening remarks to a hearing before the Senate Caucus on International Narcotics Control, July 13, 2004. drugcaucus.senate.gov/steroids04grassley.html [accessed April 27, 2006].

³Volkow, N.D. Consequences of the Abuse of Anabolic Steroids—Before the Committee on Government Reform—United States House of Representatives: Statement for the Record, May 17, 2005. Bethesda, MD: National Institute on Drug Abuse. www.drugabuse.gov/testimony/3-17-05testimony.html [accessed March 30, 2006].

⁴Johnston, L.D., O'Malley, P.M., Bachman, J.G., and Schulenberg, J.E. *Monitoring the Future: National Results on Adolescent Drug Use—Overview of Key Findings, 2004*. NIH Publication No. 05-5726. Bethesda, MD: National Institute on Drug Abuse, 2005, p. 4.

⁵Brower, K.J. Anabolic steroid abuse and dependence. *Current Psychiatry Report* 4(5):377–387, 2002.

⁶Pope, H.G., Jr., and Brower, K.J. Anabolic-androgenic steroids. In: Galanter, M., and Kleber, H.D., eds. *The American Psychiatric Publishing Textbook of Substance Abuse Treatment*, 3d ed. Arlington, VA: American Psychiatric Publishing, Inc., 2004, pp. 301–309.

⁷Pope, H.G., Jr., and Kanayama, G. Can you tell if your patient is using steroids? *Current Psychiatry in Primary Care* 1(2):28–34, 2005.

⁸Arvary, D., and Pope, H.G. Anabolic-androgenic steroids as a gateway to opioid dependence (letter). *New England Journal of Medicine* 342:1532, 2000.

⁹National Institute on Drug Abuse. *Anabolic Steroids*. NIDA Community Drug Alert Bulletin, April 2000 (last updated December 2004). www.nida.nih.gov/SteroidsAlert/SteroidAlert.html [accessed April 10, 2006].

Resources for Additional Information

Substance Abuse and Mental Health Services Administration (SAMHSA)

1 Choke Cherry Road
Room 8-1054
Rockville, MD 20857
Phone: 240-276-2130 (Office of Communications)
Web: www.samhsa.gov

SAMHSA's National Clearinghouse for Alcohol and Drug Information (NCADI)

Phone: 800-729-6686
Español: 877-767-8432
TDD: 800-487-4889
Web: www.ncadi.samhsa.gov

National Institute on Drug Abuse (NIDA)

6001 Executive Boulevard
Bethesda, MD 20892-9561
Phone: 301-443-1124
Web: www.drugabuse.gov/drugpages/steroids.html
and www.steroidabuse.gov

U.S. Food and Drug Administration (FDA)

5600 Fishers Lane
Rockville, MD 20857-0001
Phone: 888-INFO-FDA (888-463-6332)
Web: www.fda.gov

Substance Abuse Treatment Advisory

Substance Abuse Treatment Advisory was written and produced under contract number 270-04-7049 by the Knowledge Application Program (KAP), a Joint Venture of JBS International, Inc., and The CDM Group, Inc., for the Center for Substance Abuse Treatment (CSAT), Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services (HHS). The content of this publication does not necessarily reflect the views or policies of SAMHSA or HHS.

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Recommended Citation: Center for Substance Abuse Treatment. Anabolic steroids. *Substance Abuse Treatment Advisory*. Volume 5, Issue 3, June 2006.



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