American Journal of Men's Health
2018, Vol. 12(5) 1352–1357

DOI: 10.1177/1557988316648704
journals.sagepub.com/home/jmh
SAGE

The Availability and Acquisition of Illicit Anabolic Androgenic Steroids and Testosterone Preparations on the Internet

J. Abram McBride, MD[1], Culley C. Carson, MD, III[1], and Robert M. Coward, MD[1]

Abstract

The lifetime prevalence of anabolic androgenic steroids (AAS) use in the United States is over 1%. Recent reports have suggested AAS can easily be obtained over the Internet without a prescription, but this has been poorly studied. This study focused on determining the availability and ease of purchase for AAS, testosterone, and other non-AAS therapies on the Internet from the perspective of a typical consumer. A Google search was performed and the top-ranking sites offering AAS for sale were individually evaluated for selection of AAS offered, the purchasing process, and additional consumer information to support AAS use. The current results revealed that 87% of sites offered commonly used forms of AAS, injectable testosterone, and non-AAS hormone therapies. Seventy-five percent offered at least one postcycle recovery agent and 62% offered at least one erectile dysfunction medication. No site required a prescription for purchase of any substance, 75% accepted common forms of payment including credit card, and all sites were supplied by unregulated international pharmacies providing shipment to home addresses with disclaimers that consumers are liable to local laws. Seventy-five percent of sites provided specific cycle and stacking recommendations, 62% provided postcycle recovery information, but only one site offered information on non-AAS alternatives. In conclusion, AAS, injectable testosterone, and other non-AAS therapies are readily available and remarkably easy to purchase on the Internet without a prescription. It is of paramount importance that clinicians are aware of this considerable public health problem given the detrimental physiologic effects including infertility and sexual dysfunction.

Keywords

andrology, health awareness, hypogonadism, drug use, public health

Introduction

The anabolic and androgenic effects of testosterone and its synthetic derivatives commonly referred to as anabolic androgenic steroids (AAS) have been recognized for decades. Not long after testosterone was synthesized in 1935, reports emerged highlighting use by athletes to improve their athletic performance (Nieschlag & Nieschlag, 2014). As this trend continued, the U.S. government ultimately passed the Anabolic Steroids Control Act of 1990, labeling testosterone and AAS as Schedule III controlled substances. Yet it was not until the Bay Area Laboratory Co-Operative (BALCO) scandal in 2003 that knowledge of the use of AAS as performance-enhancing drugs by professional and Olympic athletes became widely recognized (Coward et al., 2013).

Pre-BALCO data estimate that approximately 3 million people use AAS in the United States, including up to 3% of high school–age adolescents, 14% of collegiate athletes, and 30% of community weight trainers (Sjoqvist, Garle, & Rane, 2008). More recent estimates indicate approximately 4 million AAS users in the United States with 25% demonstrating drug dependence (Pope et al., 2014). Historically, typical AAS users were professional or competitive athletes, but recent survey data reveal over 75% of AAS users are noncompetitive bodybuilders or athletes, reporting cosmetic benefits over performance enhancement for AAS use (Evans, 1997; Parkinson &

[1]University of North Carolina at Chapel Hill, NC, USA

Corresponding Author:
J. Abram McBride, Department of Urology, School of Medicine, University of North Carolina at Chapel Hill, 2113 Physician's Office Building, CB#7235, 170 Manning Drive, Chapel Hill, NC 27599-7235, USA.
Email: jamcbrid@unch.unc.edu

Evans, 2006). Alternatively, men older than 40 years tend to use AAS to enhance physical performance and combat the aging process (Ip et al., 2015). A recent British military report describes AAS use by 4% of military trainees to aid physical performance and recovery, representing a novel AAS user (Casey, Hughes, Izard, & Greeves, 2014). Yet these numbers may underrepresent what clinicians encounter as only half of AAS users admit to prior AAS use when interviewed by a physician (Pope, Kanayama, Ionescu-Pioggia, & Hudson, 2004).

The BALCO scandal also unveiled the practice of designing new AAS drugs by making subtle changes in the chemical structure to avoid detection by regulatory drug screening (Joseph & Parr, 2015; Parr, Flenker, & Schanzer, 2010). Of concern, designer AAS production continues, with many purposefully marketed under the guise of dietary supplements to bypass U.S. Food and Drug Administration (USFDA) regulations (Geyer et al., 2008; Joseph & Parr, 2015). While the negative health impacts of traditional AAS are widely accepted, the health impacts of designer AAS are largely unknown (Joseph & Parr, 2015; Sjoqvist et al., 2008). Most AAS users regardless of age or intended effect "stack" multiple agents at high dosages and "cycle" with recovery agents to minimize toxicity (Evans, 1997; Parkinson & Evans, 2006). Despite the myriad negative effects, only 15% of AAS users regret prior use, mostly from the negative impact on fertility (Kovac et al., 2015).

Traditionally, AAS were obtained through clandestine encounters directly with dealers at gyms or other locales who smuggled AAS into the United States from Mexico or Europe, according to 2004 U.S. Drug Enforcement Administration estimates. However, a recent trend toward obtaining AAS over the Internet was identified in over 50% of AAS users through a large online survey, whereas 15% utilized local sources or friends (Cohen, Collins, Darkes, & Gwartney, 2007). Likewise, a 2005 report from the U.S. Government Accountability Office (USGAO) suggested that nearly half of websites offering AAS actually sell them over the Internet, with the remaining sites serving as fake storefronts or shipping counterfeit products (Cramer, Kaneshiro, Rodriguez, & Egan, 2005). Other data have more comprehensively evaluated the quantity and quality of information available on the Internet for AAS consumption, but characterization of the online availability and purchasing process of AAS has been poorly described (Brennan, Kanayama, & Pope, 2013; Clement, Marlowe, Patapis, Festinger, & Forman, 2012; Cordaro, Lombardo, & Cosentino, 2011). Therefore, the objective of this study was to determine the availability and ease of purchase for AAS, testosterone, and other non-AAS therapies on the Internet from the perspective of a typical consumer.

Materials and Method

The Google search engine was used to perform a search for AAS, testosterone, and other non-AAS therapies on the Internet using the search term: "buy steroids." The search was performed during July 11 to 26, 2015, from Durham, North Carolina. Only the top 10 sites for each search term were noted because previous data indicate very few Internet users ever search beyond the first page of search results (Eysenbach & Kohler, 2002). The search focused on websites aimed at selling AAS, testosterone, and other non-AAS therapies directly to consumers via the Internet. Therefore, advertisement links and discussion forums were excluded.

As a primary objective of the study, each site was individually evaluated for the availability of AAS and stratified by type(s) of testosterone preparations, synthetic AAS, non-AAS hormone therapies, postcycle recovery agents, erectile dysfunction (ED) medications, and non-AAS supplements. Synthetic AAS within the current search were defined as synthetic derivatives of medically synthesized testosterone and other anabolic hormone preparations to optimize androgenic effects. Non-AAS hormone therapies were defined as those agents commonly used in conjunction with AAS to accentuate the anabolic effects but minimize toxicity. Non-AAS supplements were defined as agents composed of naturally occurring extracts or herbs known to have anabolic properties but are free of synthetic AAS or testosterone.

The other primary objective of the study was characterization of the purchasing process for each evaluated site. Each site was browsed, and testosterone and synthetic AAS agents were randomly selected for purchase by placing them into the site's shopping cart. Concurrently, the pharmacy(s) supplying each site was noted and each was independently researched using Google. The checkout process was continued up to the point of actual purchase as to refrain from illegal activity. During the checkout process, the need for medical prescription, payment method, and delivery options including specific delivery policies or legal disclaimers were noted. Last, the quantity of supportive consumer information and instruction for AAS use was evaluated per site. This information was stratified by specific cycle recommendations, postcycle recovery recommendations, and information promoting non-AAS supplements or alternative therapies. Due to the purely descriptive nature of this study aimed at providing a snapshot of AAS availability and acquisition process on the Internet for nonmedical use by a typical consumer, analytic statistical analysis was not performed.

Results

Eight of the 10 links retrieved by searching Google for "buy steroids" met the inclusion and exclusion criteria

Table 1. Evaluated Websites Stratified by Availability of AAS, Testosterone, and Other Non-AAS Therapies.

Website name (Google search rank order)	Synthetic AAS[a]	Testosterone preparations[a]	Non-AAS hormones[a]	Recovery agents[a]	ED medications[a]	Non-AAS supplements
anabolics.com	No	No	Yes	No	No	Yes
roidsmall.net	Yes	Yes	No	Yes	Yes	No
iroids.com	Yes	Yes	Yes	No	No	No
buysteroidonline.com	Yes	Yes	Yes	Yes	Yes	No
myroidshop.com	Yes	Yes	Yes	Yes	Yes	No
athletespharmacy.net	Yes	Yes	Yes	Yes	Yes	No
anabolics-supplementary.com	Yes	Yes	Yes	Yes	Yes	No
shop.anabolicsonline.net	Yes	Yes	Yes	Yes	Yes	No

Note. AAS = anabolic androgenic steroids; ED = erectile dysfunction.
[a]See Table 2 for commonly offered names.

Table 2. Commonly Offered AAS Agents, Non-AAS Agents, and Pharmacies.

Synthetic AAS	Dianabol, Deca-Durabolin, Anadrol, Masteron, Winstrol
T preparations (injectable)[a]	Enanthate, cypionate, propionate, blend
Non-AAS hormones	Human growth hormone, thyroid hormone, levothyroxine, insulin-like growth factor
Recovery agents	hCG, clomiphene citrate, tamoxifen, anastrozole, letrozole
ED medications	Sildenafil, tadalafil, vardenafil, injectable alprostadil
International pharmacies (continent)	Balkan Pharmaceuticals (EU), Opiox Pharmaceuticals (EU), British Dragon (EU), Scrioxx (unknown), Kalpa Pharmaceuticals (Asia), Dragon Pharmaceuticals (Asia), Gen-Shi Laboratories (Asia), Alpha Pharmaceuticals (Asia)

Note. AAS = anabolic androgenic steroids; ED = erectile dysfunction; hCG = human chorionic gonadotropin; EU = European Union; Blend = combination of two or more testosterone agents.
[a]No site offered any testosterone preparation other than injectable.

and were evaluated for content (Table 1). The two excluded links were for a YouTube video and steroid consumer information site (steroid.com). For the eight evaluated sites, seven of eight (87%) offered injectable testosterone preparations including enanthate, cypionate, and propionate, while no site offered non-injectable preparations. Eighty-seven percent of sites offered the most commonly abused synthetic AAS including Dianabol, Deca-Durabolin, Anadrol, Masteron, and Winstrol (Table 2). Eighty-seven percent of sites offered several non-AAS hormones commonly including human growth hormone, insulin-like growth factor, thyroid hormone, and levothyroxine. Six of eight sites (75%) offered at least one postcycle recovery agent with commonly offered options including gonadotropins, serum estrogen receptor modulators, and aromatase inhibitors (Table 2). Five of eight (62%) of sites offered at least one ED medication, usually phosphodiesterase-5 inhibitors, but one site (anabolics-supplementary.com) also offered intracavernosal injection therapy.

One of the eight sites (12.5%), anabolics.com, offered non-AAS supplements and did not offer any form of testosterone, synthetic AAS, or ED medications. However, each of their supplements was named synonymously with the well-known synthetic AAS agent for which their supplement mimicked. A representative example is D-ANABOL 25 composed of rhodiola root powder, fenugreek seed extract, cyanotis vaga extract, inosine, and clary sage leaf extract, allowing categorization as a natural supplement by the USFDA. Yet the displayed product description of expected results using D-ANABOL 25 is nearly identical to the results described with the use of Dianabol, a widely used synthetic AAS, according to several forums on the steroid.com website.

Characterization of the purchase process (Table 3) revealed that a prescription was not required for the purchase of any agent from any of the evaluated sites. In fact, one site (anabolics-supplementary.com) provided a "prescription" with the order to enhance customs compliance. Simulating the purchasing process demonstrated that 75% of sites accepted normal methods of online payment including credit cards or PayPal. The other sites only accepted third-party methods of payment such as money orders or Bitcoin. All of the sites, except anabolics.com, utilized international pharmacies as suppliers (Table 2), with each displaying legal disclaimers relinquishing responsibility for compliance with local laws regulating drug use to the consumer. Many of the international pharmacies possessed individual websites with general information, but some did not, such as Scrioxx. In contrast,

Table 3. Evaluated Websites Stratified by Purchasing Process and Consumer Information.

Website	Prescription required	Payment method accepted	Pharmacy location	Cycle recommendations	Postcycle recovery information	Nonsteroid alternatives
anabolics.com	No	Credit card, PayPal	Texas	Yes	No	Yes
roidsmall.net	No	PayPal, Bitcoin	International[a]	Yes	Yes	No
iroids.com	No	Credit card, PayPal	International[a]	Yes	No	No
buysteroidonline.com	No	Money transfer	International[a]	Yes	No	No
myroidshop.com	No	Credit card, PayPal	International[a]	Yes	No	No
athletespharmacy.net	No	Credit card, PayPal	International[a]	No	No	No
anabolics-supplementary.com	No	Credit card, PayPal	International[a]	No	No	No
shop.anabolicsonline.net	No	Credit card, PayPal, Bitcoin	International[a]	Yes	No	No

[a]See Table 2 for commonly used international pharmacies.

Anabolics.com based in Humble, Texas, advertised products that "are not drugs and are not approved for sale or use by the USFDA," but that "represent alternatives to anabolic steroids and should be taken as nutritional supplements with a well-balanced diet." All evaluated sites shipped discreetly to home addresses internationally, with most providing a 100% delivery guarantee with a resend of the product if it does not arrive.

Last, 75% of sites offered recommendations for specific product stacking and cycling regimens. Many of these sites contained unmonitored blogs or review columns allowing for detailed information and customer feedback on the use of each product. Sixty-two percent provided postcycle recovery information; however, only 12.5% of the sites offered information or recommendations for non-AAS alternatives.

Discussion

The growing use of AAS regardless of age, gender, or intended use is a significant public health problem, affecting over 1% of the U.S. population (Pope et al., 2014). The negative health impact of AAS on the cardiovascular, hepatic, hematologic, neurologic, psychiatric, dermatologic, and endocrine systems including fertility and sexual function are well-documented in the literature (Coward et al., 2013; Evans, 1997; Parr et al., 2010; Sjoqvist et al., 2008). Also of concern, the demand for designer AAS to avoid legal detection ensures continued growth of the AAS market, particularly on the Internet, but the physiologic effects of these newer, designer drugs are unknown (Geyer et al., 2008; Joseph & Parr, 2015). Recent data have indicated a shift in the acquisition of AAS agents and information on their use from personal exchanges to the Internet where information is anonymous and unregulated (Cohen et al., 2007; Evans, 1997). To date, the acquisition process and ease of purchase of AAS from websites offering AAS have been poorly characterized (Cramer et al., 2005).

The current study demonstrates that injectable testosterone preparations, synthetic AAS, non-AAS hormone therapies, postcycle recovery agents, and non-AAS supplements are readily available and remarkably easy to purchase on the Internet without a prescription. Nearly all websites evaluated, regardless of country of origin, accept common methods of payment, are supplied by unregulated international pharmacies, and ship directly to home addresses with legal disclaimers delegating legal responsibility to the consumer for compliance with local laws governing consumption. Likewise, ample information is available on how to "cycle" and "stack" various AAS substances but little information is available on the negative effects of AAS or nonsteroid alternatives. The only site to offer non-AAS supplements in this study was also the only site whose pharmacy was located in the United States and all advertised products despite anabolic effects were presented as "supplements" containing natural or herbal ingredients of unknown quantity, quality or origin, allowing compliance with USFDA regulations.

To date, only a handful of other studies have characterized the information available on the Internet for AAS consumption or AAS agents available for purchase (Brennan et al., 2013; Clement et al., 2012; Cordaro et al., 2011; Cramer et al., 2005). While the methods were unscientific and poorly described, the first and only study to evaluate in detail the purchasing process of AAS over the Internet without a prescription was a 2005 report from the USGAO (Cramer et al., 2005). Government investigators

found "hundreds" of websites offering AAS for purchase and submitted 22 orders of which 14 shipped but only 10 actually contained AAS substances. Similar to the current findings, all AAS products were purchased using a credit card and delivered to home addresses using discreet, anonymous packaging from international pharmacies located in Europe and Asia. Additionally, the study highlighted the difficulty with which law enforcement can intercept these shipments due to the anonymity of the Internet, volume of mail processed at centralized points of entry to the United States, and poor cooperation with foreign governments where AAS use without a prescription is legal. Similarly, a study from 2006 suggested that 35% of sites advertising AAS on the Internet did not require a prescription for purchase and 30% or 50% accepted money orders or credit cards for payment respectively, but the purchase process was not rigorously evaluated (Clement et al., 2012). Interestingly, this study searched both Google and Yahoo search engines with no observed differences in the results (Clement et al., 2012). Only 11% of sites were registered in the United States, but all functioned as a "portal" to international pharmacies. Also, half of sites proclaimed AAS benefits, but only 5% detailed the risks with use (Clement et al., 2012).

More recently, an Italian study using a Google search evaluated 30 websites advertising AAS for sale reported numerous AAS products available per site including non-AAS hormones (40% to 60%), postcycle recovery agents (20% to 60%), ED agents (56%), and other agents to minimize AAS toxicity (3% to 33%)(Cordaro et al., 2011). Nearly half of sites recommended specific AAS "cycles" or "stacks" at doses twofold to fourfold higher than medically recommended, but less than a third described the risk with AAS use with most side effects characterized as "mild" (Cordaro et al., 2011). Uniquely, this study cross-referenced advertised chemical names with online chemical databases and determined many products to be counterfeit (Cordaro et al., 2011). In contrast to the findings in the present study, only one site offered a refund or reshipment in the event of customs seizure, and two sites required a minimum amount for shipments to military (APO/AE) addresses (Cordaro et al., 2011). Last, the most recent study from 2013 searched Google using broader criteria and reported "thousands" of sites composed of discussion forums and storefronts advertising AAS for sale with heavy emphasis on AAS benefits and many downplaying AAS side effects, stating "the dangers were grossly exaggerated by incompetent physicians, biased scientists, and government bureaucrats" (Brennan et al., 2013). Similar to the current results, many sites displayed disclaimers endorsing individual responsibility for compliance with local laws governing AAS consumption (Brennan et al., 2013). Interestingly, many discussion forums identified sites that reliably delivered purchased AAS products and those selling counterfeit products, suggesting the sale of counterfeit AAS over the Internet is an ongoing issue (Brennan et al., 2013).

There are several limitations inherent to the present study that should be acknowledged. First, as mentioned, only the first 10 hits within the Google search were evaluated. While many sites were likely excluded by such criteria, the intent of the authors was to mimic the typical Internet user's behavior, and previous data indicate that Internet users rarely search beyond the first page of search results (Eysenbach & Kohler, 2002). Second, the evaluation of the purchasing process terminated just before confirming the purchase, and, therefore, it is unknown that if any of the sites would actually deliver the ordered products. It is also unknown if any of the delivered AAS products would be authentic or counterfeit as suggested by previous works (Brennan et al., 2013; Cordaro et al., 2011; Cramer et al., 2005). To the authors' knowledge, no study other than the USGAO report has actually purchased AAS products over the Internet and chemically confirmed the AAS substances. However, published data using mass spectrometry to evaluate the chemical composition of nutritional supplements has demonstrated a 15% inadvertent contamination rate with designer AAS substances, likely due to manufacturing at the same facility (Geyer et al., 2008). Last, due to the volatile nature of information on the Internet, the actual names of sites included within the current search are subject to change. In fact, some have suggested that one AAS distributor may have several different websites active at any point in time to maximize sales volume (Clement et al., 2012). Similarly, Internet search results can be dependent on geographic location and personal browser history from where the search is performed, and therefore the current specific search results may not be representative of other geographic regions.

In conclusion, this study confirms within the medical literature previous suggestions that injectable testosterone, synthetic AAS, non-AAS hormones, and other adjunctive therapies are easily purchased over the Internet and delivered to a consumer's home without the need for a prescription. Likewise, this study also confirms that the majority of AAS obtained over the Internet are manufactured by unregulated international pharmacies of unknown quality or content. The majority of information provided by sites selling AAS is aimed at emphasizing the benefits with little acknowledgement of the risk with AAS use. Therefore, it is of paramount importance that clinicians are aware of this considerable problem given the known significant detrimental effects of these agents, including long-term infertility and sexual dysfunction.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

Brennan, B. P., Kanayama, G., & Pope, H. G., Jr. (2013). Performance-enhancing drugs on the web: A growing public-health issue. *American Journal on Addictions*, *22*, 158-161. doi:10.1111/j.1521-0391.2013.00311.x

Casey, A., Hughes, J., Izard, R. M., & Greeves, J. P. (2014). Supplement use by UK-based British Army soldiers in training. *British Journal of Nutrition*, *112*, 1175-1184. doi:10.1017/s0007114514001597

Clement, C. L., Marlowe, D. B., Patapis, N. S., Festinger, D. S., & Forman, R. F. (2012). Nonprescription steroids on the Internet. *Substance Use & Misuse*, *47*, 329-341. doi:10.3109/10826084.2011.630225

Cohen, J., Collins, R., Darkes, J., & Gwartney, D. (2007). A league of their own: Demographics, motivations and patterns of use of 1,955 male adult non-medical anabolic steroid users in the United States. *Journal of the International Society of Sports Nutrition*, *4*, 12. doi:10.1186/1550-2783-4-12

Cordaro, F. G., Lombardo, S., & Cosentino, M. (2011). Selling androgenic anabolic steroids by the pound: Identification and analysis of popular websites on the Internet. *Scandinavian Journal of Medicine & Science in Sports*, *21*, e247-e259. doi:10.1111/j.1600-0838.2010.01263.x

Coward, R. M., Rajanahally, S., Kovac, J. R., Smith, R. P., Pastuszak, A. W., & Lipshultz, L. I. (2013). Anabolic steroid induced hypogonadism in young men. *Journal of Urology*, *190*, 2200-2205. doi:10.1016/j.juro.2013.06.010

Cramer, R. J., Kaneshiro, D., Rodriguez, R., & Egan, R. (2005). *Anabolic steroids are easily purchased without a prescription and present significant challenges to law enforcement officials* (GAO-06-243R). Retrieved from http://www.gao.gov/new.items/d06243r.pdf

Evans, N. A. (1997). Gym and tonic: A profile of 100 male steroid users. *British Journal of Sports Medicine*, *31*, 54-58.

Eysenbach, G., & Kohler, C. (2002). How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *British Medical Journal*, *324*, 573-577.

Geyer, H., Parr, M. K., Koehler, K., Mareck, U., Schanzer, W., & Thevis, M. (2008). Nutritional supplements cross-contaminated and faked with doping substances. *Journal of Mass Spectrometry*, *43*, 892-902. doi:10.1002/jms.1452

Ip, E. J., Trinh, K., Tenerowicz, M. J., Pal, J., Lindfelt, T. A., & Perry, P. J. (2015). Characteristics and behaviors of older male anabolic steroid users. *Journal of Pharmacy Practice*, *28*, 450-456. doi:10.1177/0897190014527319

Joseph, J. F., & Parr, M. K. (2015). Synthetic androgens as designer supplements. *Current Neuropharmacology*, *13*(1), 89-100. doi:10.2174/1570159x13666141210224756

Kovac, J. R., Scovell, J., Ramasamy, R., Rajanahally, S., Coward, R. M., Smith, R. P., & Lipshultz, L. I. (2015). Men regret anabolic steroid use due to a lack of comprehension regarding the consequences on future fertility. *Andrologia*, *47*, 872-878. doi:10.1111/and.12340

Nieschlag, E., & Nieschlag, S. (2014). Testosterone deficiency: A historical perspective. *Asian Journal of Andrology*, *16*, 161-168. doi:10.4103/1008-682x.122358

Parkinson, A. B., & Evans, N. A. (2006). Anabolic androgenic steroids: A survey of 500 users. *Medicine & Science in Sports & Exercise*, *38*, 644-651. doi:10.1249/01.mss.0000210194.56834.5d

Parr, M. K., Flenker, U., & Schanzer, W. (2010). Sports-related issues and biochemistry of natural and synthetic anabolic substances. *Endocrinolgy and Metabolism Clinics of North America*, *39*, 45-57. doi:10.1016/j.ecl.2009.11.004

Pope, H. G., Kanayama, G., Athey, A., Ryan, E., Hudson, J. I., & Baggish, A. (2014). The lifetime prevalence of anabolic-androgenic steroid use and dependence in Americans: Current best estimates. *American Journal on Addictions*, *23*, 371-377. doi:10.1111/j.1521-0391.2013.12118.x

Pope, H. G., Kanayama, G., Ionescu-Pioggia, M., & Hudson, J. I. (2004). Anabolic steroid users' attitudes towards physicians. *Addiction*, *99*, 1189-1194. doi:10.1111/j.1360-0443.2004.00781.x

Sjoqvist, F., Garle, M., & Rane, A. (2008). Use of doping agents, particularly anabolic steroids, in sports and society. *Lancet*, *371*, 1872-1882. doi:10.1016/s0140-6736(08)60801-6

U.S. Drug Enforcement Administration. (2004). *Steroid abuse in today's society: A guide for understanding steroids and related substances*. Washington, DC: Author.