

An hourglass-shaped graphic with a globe inside. The top bulb is dark blue, and the bottom bulb is light blue. The globe is a darker shade of blue. The hourglass is centered on the page.

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*Anti-Doping Policies: The Olympics and Selected
Professional Sports*

L. Elaine Halchin, Government and Finance Division

October 17, 2007

Abstract. This report compares current anti-doping policies for performance enhancing substances among the Olympic movement and six professional sports leagues. Details associated with the policies of the Olympics, Major League Baseball, the NFL, and the National Basketball Association (NBA) policies are presented in Table 1. Table 2 includes the same details about the policies of Major League Soccer (MLS), the Women's National Basketball Association (WNBA), and the National Hockey League (NHL). The report also presents elements of what have been identified as model anti-doping policies and (in the appendix) provides a comparison of Major League Baseball's former and current anti-doping policies (Table 3) and a glossary of related terms.

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CRS Report for Congress

Anti-Doping Policies: The Olympics and Selected Professional Sports

Updated October 17, 2007

L. Elaine Halchin
Analyst in American National Government
Government and Finance Division

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Prepared for Members and
Committees of Congress

Anti-Doping Policies: The Olympics and Selected Professional Sports

Summary

The use of performance-enhancing substances by athletes has a long history, predating the ancient Greek Olympiads. Concern about this practice was manifested in the 20th century by, in the case of the Olympics, the creation of anti-doping organizations, and the adoption of anti-doping policies by these organizations and professional sports leagues in the United States. Leading the way was the International Olympic Committee (IOC), which implemented testing in 1968 at the Olympic Games in Grenoble, France, and Mexico City, Mexico. Beginning in the 1980s, several professional sports leagues in the United States, such as the National Football League (NFL) and Major League Baseball (MLB), followed suit.

This report compares current anti-doping policies for performance enhancing substances among the Olympic movement and six professional sports leagues. Details associated with the policies of the Olympics, Major League Baseball, the NFL, and the National Basketball Association (NBA) policies are presented in **Table 1**. **Table 2** includes the same details about the policies of Major League Soccer (MLS), the Women's National Basketball Association (WNBA), and the National Hockey League (NHL). The report also presents elements of what have been identified as model anti-doping policies and (in the appendix) provides a comparison of Major League Baseball's former and current anti-doping policies (**Table 3**) and a glossary of related terms.

In general, the report indicates that the anti-doping policies for the Olympic movement are more independent of the sports they regulate than are the policies of the six professional sports leagues discussed in this report, both in the manner in which they are established and in the entities responsible for their implementation. For example, the World Anti-Doping Agency (WADA) unilaterally established the anti-doping policy for Olympic athletes, whereas the professional sports leagues' policies are the result of negotiations with their respective players associations. The Olympic movement also maintains the most comprehensive list of prohibited substances and methods, and provides sanctions that are more strict than in the professional sports. For example, the Olympic standard provides a two-year ban for a first violation, whereas the NBA imposes a 10-game suspension without pay for a first violation.

Direct comparison of these sports is sometimes difficult because the policies use different terminology or make reference to other standards. The policies are also constantly changing in response to the development of new substances that are sometimes designed to avoid detection. In some cases, the policies prohibit certain substances for which tests are not available in order to inform athletes about harmful substances. However, in other cases, tests and sanctions are not provided for substances for which tests are available.

This report will be updated as anti-doping policies change and elements of those policies become clearer.

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Anti-Doping Policies: The Olympics and Selected Professional Sports

Anti-Doping Policies

While the use of drugs and other substances — such as alcohol, ether, strychnine, anabolic steroids, stimulants, and hallucinogenic mushrooms — as a means of improving athletic performance has a lengthy history, predating the ancient Greek Olympiads, condemnation of the practice did not surface until the early 20th century.¹ In 1933, Dr. Otto Reiser commented that

[t]he use of artificial means [*to improve performance*] has long been considered wholly incompatible with the spirit of sport and has therefore been condemned. Nevertheless, we all know that this rule is continually being broken, and that sportive competitions are often more a matter of doping than of training. It is highly regrettable that those who are in charge of supervising sport seem to lack the energy for the campaign against this evil, and that a lax, and fateful, attitude is spreading.”²

Despite such concerns about the use of performance-enhancing substances (PES) by athletes, anti-doping policies for the Olympic movement and several major professional sports leagues in the United States were not drafted until the latter part of the 20th century. On the other hand, the two youngest sports leagues — Major League Soccer (MLS) and the Women’s National Basketball Association (WNBA) — first addressed the issue of performance-enhancing substances when they were created.

- The International Olympic Committee (IOC) implemented testing in 1968, at the Olympic Games in Grenoble, France, and Mexico City, Mexico. Anabolic steroids were added by the IOC to its list of prohibited substances in 1976.³

¹ Charles E. Yesalis, William A. Anderson, William E. Buckley, and James E. Wright, *Incidence of the Nonmedical Use of Anabolic-Androgenic Steroids*, research monograph 102, U.S. Dept. of Health and Human Services, National Institute on Drug Abuse (Washington: GPO, 1990), pp. 97-98; Charles E. Yesalis and Michael S. Bahrke, “History of Doping in Sport,” in *Performance-Enhancing Substances in Sport and Exercise*, Michael S. Bahrke and Charles E. Yesalis, eds. (Champaign, IL: Human Kinetics, 2002), pp. 1-2.

² Yesalis and Bahrke, “History of Doping in Sport,” p. 1. (Italics in original.)

³ World Anti-Doping Agency, “A Brief History of Anti-Doping,” n.d., available online at [http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=312].

- The National Football League (NFL) followed suit, in 1982, when it began to test players, although testing for anabolic steroids did not begin until 1987.⁴
- The National Basketball Association's (NBA) first anti-doping policy was issued in 1983.⁵
- Major League Baseball implemented an anti-doping policy in 2003.
- At its inception in 1996, MLS established a “zero tolerance” policy on illegal drug use. Eight years later, the Major League Soccer Player Substance Abuse and Behavioral Program and Policy, which prohibits the use of performance-enhancing substances, was established as part of the league's first collective bargaining agreement (CBA).⁶
- In July 2005, the National Hockey League (NHL) and the National Hockey League Players Association ratified a CBA that includes a performance-enhancing substances program.
- The first CBA for the WNBA, which was signed April 29, 1999, included a drug program.⁷

These sports leagues have continued to maintain, and update, their anti-doping policies.

This report compares current anti-doping policies among the Olympic movement and six professional sports. **Table 1** includes the Olympic movement, Major League Baseball, the NBA, and the NFL. **Table 2** also includes the Olympic movement — because its policy is generally considered to be the most stringent one and, as such, serves as a baseline for comparison purposes — and the MLS, NHL, and WNBA policies.

Although the anti-doping policies in this report sometimes include so-called “recreational” drugs such as cocaine and marijuana, this report generally focuses on performance-enhancing substances. Also, it is important to emphasize that the

⁴ Ibid., p. 2.

⁵ Information provided by the NBA's Basketball Communications Office, to the author, May 19, 2004.

⁶ U.S. Congress, House Energy and Commerce Committee, Subcommittee on Commerce, Trade, and Consumer Protection, *The Drug Free Sports Act of 2005*, hearing on H.R. 1862, 109th Cong., 1st sess., May 18 and 19, 2005, (Washington: GPO, 2005), pp. 19-21.

⁷ Letter from Jamin Dershowitz, General Counsel, Women's National Basketball Association, to Representative F. James Sensenbrenner, Jr., Chairman, and Representative John Conyers, Jr., Ranking Minority Member, House Committee on the Judiciary, dated June 20, 2005.

descriptions and comparisons made here reflect the different sports' anti-doping *policies*, not their *implementation*.

In addition, this report presents elements of what have been identified as model anti-doping policies and, in the appendix, provides a comparison of Major League Baseball's former and current anti-doping policies (**Table 3**) and a glossary of related terms.

Olympic Policies More Independent of Regulated Sports

In general, this report indicates that the anti-doping policies for the Olympic movement are more independent of the sports they regulate than are the policies of Major League Baseball, the NBA, the NFL, MLS, the NHL, and the WNBA, both in the manner in which they are established and in the entities responsible for their implementation. For example, the anti-doping policies of the professional sports leagues are established through a collective bargaining process between a players association and the applicable league, both of which benefit from professional players' performances. These policies also are administered by entities selected by the players associations and the leagues (for example, the medical director that administers the NBA's anti-doping policy is selected jointly by the NBA and the National Basketball Players' Association (NBPA)). By contrast, in the Olympic movement, the World Anti-Doping Agency (WADA) unilaterally established the anti-doping policy and has no vested interest in the athletes' performances. The organization which administers this policy for U.S. Olympic athletes, the U.S. Anti-Doping Agency (USADA), also is independent of athletes and the organization that supports these athletes, the USOC.⁸

⁸ In 1999, the International Olympic Committee (IOC) convened a World Conference on Doping in Sport, which produced the Lausanne Declaration on Doping in Sport. The World Anti-Doping Agency (WADA) was established, pursuant to the Lausanne Declaration, on Nov. 10, 1999. (World Anti-Doping Agency, "WADA History," n.d., available at [<http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=311>].) The U.S. Anti-Doping Agency (USADA), which began operations Oct. 1, 2000, was created as a result of recommendations made by the U.S. Olympic Committee's Select Task Force on Externalization. It is responsible for anti-doping efforts within the U.S. Olympic movement. Specifically, USADA has the authority to test and educate U.S. Olympic, Paralympic, and Pan American athletes, adjudicate appeals, and conduct research in support of its anti-doping efforts. (U.S. Anti-Doping Agency, "USADA History," n.d., available at [<http://www.usantidoping.org/who/history.html>]; U.S. Anti-Doping Agency, "USADA Mission," available at [<http://www.usantidoping.org/who/mission.html>].) "The Paralympic Games is an international competition among each nation's elite athletes with physical disabilities and is second in size only to the Olympic Games. The Paralympic Games and Paralympic Winter Games follow the Olympic Games and Olympic Winter Games at the same venues and facilities. The Paralympic Games have been contested since 1960 and now feature competition in 19 sports. The Paralympic Winter Games showcase four sports, and were first held in 1976." (U.S. Olympic Committee, "The Paralympic Games," n.d., available at [http://www.usolympicteam.com/paralympics/paralympic_games.html].) The Pan American Sports Organization (PAS) consists of 42 nations of Central, North, and South America, and the Caribbean. "The Pan American Games are held every four years just like the Olympic Games and precede the Games by a year. The Pan American Games (continued...)"

A comparison of selected features of anti-doping policies shows, among other things, that the Olympic movement and MLS maintain the most comprehensive lists of prohibited substances and methods. (Major League Soccer has incorporated WADA's list of prohibited substances into its doping policy.) The development of a comprehensive list by WADA may be due, at least in part, to the general understanding that some substances or drugs benefit only athletes in certain sports.⁹ For example, a drug that slows down heart rate and reduces fine motor tremors would be more helpful to an archer than a basketball player. Another feature on which the Olympic movement and most professional sports leagues differ is whether an athlete is responsible for the substances discovered in his or her body. In both the Olympics and the NFL, an athlete is responsible, but the policies of other professional leagues either are silent on this issue or include provisions that suggest an athlete may not be subject to strict liability for substances in his or her body. Sanctions for testing positive also vary. The Olympic movement imposes the most stringent penalties: the first violation results in a two-year ban, and a second violation results in a lifetime ban from competition, as defined by WADA.¹⁰ In contrast, in the NBA, a first violation results in a 10-game suspension, a second violation results in a 25-game suspension, and a third violation leads to a one-year suspension.

Issues in Comparing Anti-Doping Policies

The structure and content of these sports' anti-doping policies vary in a number of ways, including the subjects covered in those policies, the extent of detail provided, and the language and terminology used to identify or describe prohibited

⁸ (...continued)

consist of all summer Olympic sports, plus some non-Olympic sports, and serve as an Olympic-qualifying event for many of the participating sports.” (U.S. Olympic Committee, “Pan American Games Overview,” n.d., available at [<http://www.olympic-usa.org/education/panamoverview/panindex.htm>].)

⁹ For example, the Olympic prohibition against beta-blockers applies to 16 sports (and only during competitions) including archery, curling, and gymnastics. (World Anti-Doping Agency, *The 2007 Prohibited List, International Standard*, 2006, available online at [http://www.wada-ama.org/rtecontent/document/2007_List_En.pdf], p. 10.)

¹⁰ An athlete who has been banned under the WADA *Code* has been declared ineligible. An athlete's status during eligibility is as follows: “No Person who has been declared ineligible may, during the period of ineligibility, participate in any capacity in a Competition or activity (other than authorized anti-doping education or rehabilitation programs) authorized or organized by a Signatory or Signatory's member organization” (World Anti-Doping Agency, *World Anti-Doping Code*, p. 35). Signatories are those organizations that have signed and agreed to comply with the WADA *Code* and include “the International Olympic Committee, International Federations, International Paralympic Committee, National Olympic Committees, National Paralympic Committees, Major Event Organizations, National Anti-Doping Organizations, and WADA.” (World Anti-Doping Agency, *World Anti-Doping Code*, pp. 35 and 75.) For example, the list of organizations that have accepted the WADA *Code* includes the International Fencing Federation, International Swimming Federation, International Tennis Federation, and the International Federation of Associated Wrestling Styles. (World Anti-Doping Agency, “List of Sports Organizations Who Have Accepted the Code,” n.d., available at [<http://www.wada-ama.org/en/dynamic.ch2?pageCategoryId=270>].)

substances. As a result, direct comparison of the policies is extremely difficult, and certain of their provisions may be subject to differing interpretations. Also, various contextual factors need to be considered when comparing the different sports' anti-doping policies.

Identifying prohibited substances/methods. It is sometimes difficult to determine which specific substances and methods are prohibited in an anti-doping policy. As a result, it is difficult to compare those policies. These difficulties can arise when different policies use different terminology, or when a policy refers to an associated statute or standard. For example, Major League Baseball's list of prohibited substances incorporates, by reference, several of the federal government's lists of controlled substances.¹¹ Examples of substance names found on one of the lists of controlled substances are thiopental, phendimetiazine, and clortermine. However, it is not clear whether any of these substances are beta-2 agonists, agents with anti-estrogenic activity, glucocorticosteroids, or beta-blockers — classes of substances identified by WADA as performance-enhancing substances. Our efforts to obtain clarification from Major League Baseball or the players association on this and other matters are continuing.

Changing Nature of Policies. The nature of the problem of doping in sports has implications for the creation of lists of prohibited substances and testing policies. In some cases, performance enhancing substances being used by athletes may not appear on the lists of prohibited substances because sports officials are not aware of their existence or use. For example, in an effort to evade detection of steroid use, some athletes use designer steroids, which are described as follows:

... a designer or "new" steroid [is a substance that] has been chemically produced (synthesized in the laboratory)[and] that retains the anabolic properties desired for such a drug. At the same time the molecular structure ... is chemically altered so that the currently used steroid screening test will not ... [find the drug in an athlete's specimen]....¹²

When it was created, tetrahydrogestrinone (THG) was a designer steroid. THG became known after a then-anonymous track and field coach in the United States provided a sample to USADA, which forwarded the sample to the UCLA Olympic Analytic Laboratory. Using this sample, the laboratory was able to identify the

¹¹ The federal government has established five schedules of controlled substances. The following three criteria are used to determine on which schedule to place a substance or drug: its potential for abuse, whether the item has a currently accepted medical use in the United States, and the probability that abuse of the substance could lead to physical or psychological dependence. Schedule I includes substances and drugs that have a high potential for abuse, that currently have no accepted medical use in the United States, and that lack accepted safety for use under medical supervision. Substances and drugs listed on one of the remaining four schedules have currently accepted medical uses, and the potential for abuse and the probability that abuse could lead to physical or psychological dependence declines from Schedule II through Schedule IV. (21 U.S.C. § 812(a) and (b).)

¹² R. Craig Kammerer, "Drug Testing in Sport and Exercise," in *Performance-Enhancing Substances in Sport and Exercise*, p. 330.

substance.¹³ Because designer steroids are developed specifically to avoid detection, it is impossible for anti-doping organizations or sports leagues to include them on their lists of prohibited substances. Therefore, as new doping methods become known, anti-doping policies must be revisited from time to time to ensure they are up to date.

Some of the professional sports included in this report have changed their anti-doping policies. The NFL's most recent change added agents with anti-estrogenic activity to its list of prohibited substances, increased the number of times a player may be tested during the off-season from two to six, and lowered the ratio of testosterone to epitestosterone that constitutes a presumptively positive test. A comparison of Major League Baseball's former and current policies (**Table 3** in the appendix) also shows several significant differences. Under the original policy (which applied to the 2003 and 2004 seasons), hormones may not have been prohibited; the list of sanctions allowed first-time offenders to be placed in a treatment program and permitted the imposition of a fine in lieu of a suspension without pay for second through fifth violations; and testing was not conducted during the off-season. The policy in place for the 2006 season prohibits the use of hormones; imposes a 50-game suspension without pay for a first violation, a 100-game suspension without pay for a second violation, and a permanent suspension for a third violation; and includes a provision for off-season testing.

No Tests or Sanctions for Some Prohibited Substances. Anti-doping policies may not provide tests or sanctions for certain prohibited substances. In some cases, tests for those substances are available, but are not being used. For example, a blood-based test for human growth hormone (hGH) has been developed, and has been used by the Olympic movement, but the professional sports leagues use only urine-based tests.¹⁴

¹³ In early summer 2003, USADA received a syringe from an individual who claimed to be a track and field coach. The then-anonymous coach also provided the names of American and international athletes that he alleged had used an undetectable steroid. USADA forwarded the contents of the syringe to the UCLA Olympic Analytic Laboratory, a WADA-accredited laboratory, for analysis. Dr. Don Catlin, head of the laboratory, determined that the substance was a designer steroid, meaning that it could not be detected by normal laboratory testing. The UCLA laboratory determined that the substance was tetrahydrogestrinone (THG) and developed a test for THG. (U.S. Anti-Doping Agency, "U.S. Anti-Doping Statement on Doping Case with Designer Steroids," press release, Oct. 16, 2003, available at [http://www.usantidoping.org/files/active/resources/press_releases/PressRelease_10_16_2003.pdf].) USADA has alleged that the source of THG was the Bay Area Laboratory Co-Operative (BALCO), which is located in Burlingame, CA. Internal Revenue Service agents raided BALCO in September 2003. (Mark Asher, "Bonds to Testify on Supplement Supplier," *Washington Post*, Oct. 22, 2003, p. D2.) As reported by the *Washington Post*, the Department of Justice initiated an investigation of BALCO in 2003, and the Senate Committee on Commerce requested and received information from the department's investigation. (Amy Shipley, "Olympic Officials to Request Federal Files," *Washington Post*, May 5, 2004, p. D9; Amy Shipley, "USADA Bans White for 2 Years," *Washington Post*, May 22, 2004, p. D5.)

¹⁴ See **Table 1**, table note h. for additional information about the blood-based test for human (continued...)

In other cases, though, lists of prohibited substances may include known substances for which there are no laboratory tests, or, in the case of hormones and other substances that occur naturally in the human body, for which there is an insufficient amount of data to determine “what levels of ... hormones are abnormal or indicative of abuse and what levels are normal.”¹⁵ For example, natural hormones other than testosterone — such as human chorionic gonadotropin, insulin, and erythropoietin — may be found on lists of prohibited substances, but laboratory tests may not be available yet and what constitutes an abnormal level in the human body may not yet have been determined.

Nevertheless, including substances for which laboratory tests do not exist on a list of prohibited substances may serve an organization’s purposes. For example, an organization may establish a list not only to alert athletes to doping tests but also to inform them about harmful substances. One of the purposes of the World Anti-Doping Program and the *World Anti-Doping Code* is “[t]o protect the Athletes’ fundamental right to participate in doping-free sport and thus promote health, fairness and equality for Athletes worldwide....”¹⁶ Certain elements of the rationale for the *Code* may also have a bearing on the inclusion of substances for which tests are not yet available. These include, for example, “ethics, fair play and honesty ... health ... character and education ... respect for rules and laws ... respect for self and other participants....”¹⁷ The National Football League cites three reasons, including the health of players, for its concern about the use of prohibited substances:

[They] threaten the fairness and integrity of the athletic competition on the playing field.... [T]he League is concerned with the adverse health effects of steroid use. Although research is continuing, steroid use has been linked to a number of physiological, psychological, orthopedic, reproductive, and other serious health problems.... [T]he use of Prohibited Substances by NFL players sends the wrong message to young people who may be tempted to use them.¹⁸

Thus, it appears that WADA and the NFL, and possibly other organizations as well, recognize that the value of an anti-doping program or policy extends beyond testing to include messages about harmful substances and how they might undermine athletic competition.

¹⁴ (...continued)
growth hormone.

¹⁵ R. Craig Kammerer, “Drug Testing in Sport and Exercise,” in *Performance-Enhancing Substances in Sport and Exercise*, pp. 330-331.

¹⁶ World Anti-Doping Agency, *World Anti-Doping Code*, 2003, available online at [http://www.wada-ama.org/rtecontent/document/code_v3.pdf], p. 1.

¹⁷ *Ibid.*, p. 3.

¹⁸ National Football League and NFL Players Association, *National Football League Policy on Anabolic Steroids and Related Substances*, 2007, available at [<http://www.nflpa.org/pdfs/RulesAndRegs/BannedSubstances.pdf>], pp. 1-2.

Comparison of Olympic Movement and Professional Sports Leagues Anti-Doping Policies

Table 1 below compares specific elements of the anti-doping policies of the Olympic movement, Major League Baseball, the NBA, and the NFL.¹⁹ **Table 2** does the same for the Olympic movement, MLS, the NHL, and the WNBA. Those elements include which organizations administer the policies, the substances and methods prohibited, and the sanctions for testing positive for a prohibited substance. In many cases, reference to an associated footnote is needed to understand particular elements of a sport's policy.

Table 3, which is in the appendix, compares specific elements of Major League Baseball's original policy and two revised versions. Since the policies are undated, each one is identified by the year or years it was in effect.

¹⁹ It bears noting that NFL players also are banned from participating in any endorsement agreement with companies that manufacture products that are found on the NFL's list of prohibited substances. The list, which includes nearly 70 companies, is available at [<http://www.nflpa.org/RulesAndRegs/BannedCompanies.aspx>].

Table 1. Comparison of Selected Features of Anti-Doping Policies

	Olympic Movement	Major League Baseball (MLB) and Major League Baseball Players Association (MLBPA)	National Basketball Association (NBA) and National Basketball Players Association (NBPA)	National Football League (NFL) and NFL Players Association (NFLPA)
<p>— What organization or individual is responsible for administering the anti-doping policy?</p> <p>— Is the organization or individual independent from the sponsoring organization(s)?</p>	<p>— U.S. Anti-Doping Agency (for American athletes).</p> <p>— Yes.</p>	<p>— Independent Program Administrator (IPA).</p> <p>— No. MLB and MLBPA jointly select the IPA.^a</p>	<p>— Medical director.</p> <p>— No. The medical director is selected jointly by the NBA and NBPA.</p>	<p>— NFL Advisor on Anabolic Steroids and Related Substances.</p> <p>— No. The program is conducted under the auspices of the NFL Management Council, and it appears that the Advisor is an employee of the NFL.^b</p>
Is testing conducted off-season (or out of competition, for the Olympics)?	Yes.	Yes. ^c	No.	Yes.
Is an athlete responsible for prohibited substances found in his or her body?	Yes.	No. ^d	Subject is not addressed in the policy. ^e	Yes.
Does the responsible organization test athletes for all prohibited substances ^{f,g}	No.	No. ^h	Yes. ^h	No. ^h
Does the anti-doping policy prohibit: ⁱ				

	Olympic Movement	Major League Baseball (MLB) and Major League Baseball Players Association (MLBPA)	National Basketball Association (NBA) and National Basketball Players Association (NBPA)	National Football League (NFL) and NFL Players Association (NFLPA)
— Steroids ^j	— Yes.	— Yes. ^k	— Yes.	— Yes.
— Hormones and related substances	— Yes. ^l	— Yes.	— Yes.	— Yes. ^m
— Beta-2 agonists	— Yes.	— Unclear. ⁿ	— No. ^o	— Yes.
— Agents with anti-estrogenic activity	— Yes.	— Unclear. ^p	— Yes.	— Yes.
— Diuretics and other masking agents	— Yes.	— Yes. ^q	— Yes.	— Yes.
— Enhancement of oxygen transfer	— Yes.	— No. ^r	— No.	— Yes.
— Chemical and physical manipulation	— Yes.	— Yes. ^q	— Yes. ^s	— Yes.
— Gene doping	— Yes.	— No.	— No.	— No.
— Stimulants	— Yes, but only in competition.	— Yes.	— Yes.	— Yes.
— Glucocorticosteroids	— Yes, but only in competition.	— Unclear. ^t	— No.	— No.
— Beta-blockers	— Yes, but only for certain sports.	— Unclear. ^u	— No. ^o	— No.

	Olympic Movement	Major League Baseball (MLB) and Major League Baseball Players Association (MLBPA)	National Basketball Association (NBA) and National Basketball Players Association (NBPA)	National Football League (NFL) and NFL Players Association (NFLPA)
What laboratory tests the samples?	WADA-accredited laboratories or as otherwise approved by WADA.	Subject is not addressed in the policy, but MLB has indicated that testing is conducted at a WADA-accredited laboratory in Montreal. ^v	Laboratories are selected by the NBA and NBPA, approved by the medical director, and certified by the World Anti-Doping Agency, the Substance Abuse and Mental Health Services Administration, or the International Olympic Committee. ^w	Under the existing collective bargaining agreement, samples to be analyzed for prohibited substances are to be submitted to the UCLA Olympic Analytical Laboratory at the UCLA School of Medicine, or the Sports Medicine Research and Testing Laboratory at the University of Utah. ^x
Are sanctions applicable to all prohibited substances?	Yes.	Yes.	Yes. ^y	Yes.
What are the sanctions for testing positive? ^{f,z}				
— First violation	— Two-year ban ^{aa}	— Steroids: 50-game suspension without pay. Stimulants: No sanction.	— 10-game suspension without pay.	— Suspended without pay for a minimum of four games.
— Second violation	— Lifetime ban.	— Steroids: 100-game suspension without pay. ^{bb} Stimulants: 25-game suspension without pay.	— 25-game suspension without pay.	— Suspended without pay for a minimum of eight games.

	Olympic Movement	Major League Baseball (MLB) and Major League Baseball Players Association (MLBPA)	National Basketball Association (NBA) and National Basketball Players Association (NBPA)	National Football League (NFL) and NFL Players Association (NFLPA)
— Third violation	— Not applicable.	— Steroids: Permanent suspension from MLB. ^{bb} Stimulants: 80-game suspension without pay.	— One-year suspension without pay.	— Suspended without pay for at least 12 months. Ineligible for selection to the Pro Bowl, or to receive any other honors or awards from the NFL or the NFLPA.
— Fourth and subsequent violations	— Not applicable.	— Stimulants: Suspension by the Commissioner, up to permanent suspension.	— SPEDs: Dismissed and disqualified from any association with the NBA or any of its teams for a minimum of two years.	— Not addressed.
What types of specimens are collected and tested?	Blood or urine.	Urine.	Urine.	Urine.

Sources: U.S. Anti-Doping Agency, *United States Anti-Doping Agency Protocol for Olympic Movement Testing*, revised Aug. 13, 2004, available at [<http://www.usantidoping.org/files/active/what/protocol.pdf>]; U.S. Anti-Doping Agency, “USADA Press Kit,” Sep. 13, 2007, available at [http://www.usantidoping.org/files/active/resources/press_kits/2007%20fact%20sheet_updated%20september%2013,%202007.pdf]; World Anti-Doping Agency, *World Anti-Doping Code*, 2003, available at [http://www.wada-ama.org/rtecontent/document/code_v3.pdf]; World Anti-Doping Agency, *International Standard for Testing*, June 2003, available at [http://www.wada-ama.org/rtecontent/document/testing_v3_a.pdf]; World Anti-Doping Agency, *The 2007 Prohibited List, International Standard*, 2005, available at [http://www.wada-ama.org/rtecontent/document/2007_List_En.pdf]; Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement*, n.d., available from author; National Basketball Association and National Basketball Players Association, *NBA Collective Bargaining Agreement*, 2005, available at [http://www.nbpa.com/cba_articles.php]; National Football League and NFL Players Association, *National Football League Policy on Anabolic Steroids and Related Substances*, 2007, available at [<http://www.nflpa.org/pdfs/RulesAndRegs/BannedSubstances.pdf>].

Notes:

- a. Although Major League Baseball and the players association select the independent program administrator (IPA), the policy states that this individual “shall have no affiliation with the Office of the Commissioner, any Major League Club or the [Players] Association.” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement*, n.d., available from author, p. 2.)

- b. The NFL Management Council oversees policies that relate to players, including the collective bargaining agreement. The council reports to the Commissioner of the National Football League. (Information provided by telephone by the NFL Communications Department, to the author, Apr. 18, 2005.)
- c. Under the heading “Additional Random Testing,” the policy states that “as many as 60 tests may be conducted at unannounced times during the off-season ...; provided, however, that any off-season tests shall only be for the presence of Performance Enhancing Substances [steroids].” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement*, p. 6.) Assuming that off-season testing would test 60 different players, approximately 8% of the players would be subjected to tests for performance enhancing substances during the off-season. Although the active player limit apparently is imposed only during the season, the active player limit of 25 players per team (that is, each team can have no more than 25 active players on its roster from opening day through midnight, August 31; the active player limit increases to 40 on September 1 each year) was used to calculate this percentage. (Ibid., p. 49.)
- d. The Office of the Commissioner has an initial burden to establish “that a Player’s test result was ‘positive’ ... and was obtained pursuant to a valid test conducted under Attachment 18 [the anti-doping policy]. The Office of the Commissioner is not required to otherwise establish intent, fault, negligence or knowing use of a Prohibited Substance on the Player’s part to establish such a violation. If the Office of the Commissioner meets its initial burden, the Player then has the burden of establishing that his test result was not due to his fault or negligence.” (Ibid., pp. 19-20.)
- e. This excerpt from the NBA’s anti-drug program suggests that a player may not be responsible for any prohibited substance found in his body: “Any positive test [for a prohibited substance] shall be reviewed by the Medical Director. If the Medical Director determines, in his professional judgment, that there is a valid alternative medical explanation for such positive test result, then the test shall be deemed negative.” (National Basketball Association and National Basketball Players Association, *Collective Bargaining Agreement*, 2005, available at [http://www.nbpa.com/cba_articles.php], p. 367.)
- f. Even though most anti-doping policies include non-performance-enhancing substances or drugs, such as marijuana, Ecstasy, and opiates, this item pertains only to performance-enhancing substances and related substances and methods.
- g. In some cases, accurate laboratory tests do not exist for certain prohibited substances or levels. In other cases, tests are available to detect the prohibited substances but are not used. See table note h.
- h. Human growth hormone (hGH) is on the list of prohibited substances for Major League Baseball, the NBA, and the NFL, but none of these leagues tests for it. In testimony offered during a House Committee on Government Reform hearing, Robert D. Manfred Jr., Executive Vice President, MLB, and Elliot J. Pellman, M.D., Medical Advisor to the Commissioner of Baseball, indicated that Major League Baseball does not test for human growth hormone (hGH). The rationale they offered was that no valid urine-based test exists. Mr. Manfred added: “Contrary to published reports, there is not an available, verified test for HGH, even with a blood sample.” (U.S. Congress, House Committee on Government Reform, statements of Robert D. Manfred Jr., Executive Vice President, Major League Baseball, and Elliot J. Pellman, M.D., Medical Advisor the Commissioner of Baseball, unpublished hearing, 109th Cong., 1st sess., Mar. 17, 2005, available at [http://oversight.house.gov/features/steroids/testimony_manfred.pdf] and [http://oversight.house.gov/features/steroids/testimony_pellman.pdf].) Reportedly, the NFL and the NFLPA have expressed reservations about the reliability of the blood test for hGH, and the NBPA has indicated that it would not agree to having players submit to blood tests for hGH. (Mark Maske, “NFL Questions Effectiveness of Blood Testing for Hormone,” *Washington Post*, June 10, 2006, p. E2.) As for the NBA, a newspaper article reported that the commissioner plans to discuss blood testing with the players union; however, another article noted that the players association would not agree to blood-based tests. (Mike Wise and Michael Lee, “Commissioner Is Concerned about Exploitation of Athletes,” *Washington Post*, June 10, 2006, p. E3; “NBA Union Will Not Allow HGH Testing,” *Philadelphia Daily News*, June 13, 2006, n.p.) It should be noted that the World Anti-Doping Agency tested athletes for hGH at the 2004 Athens Olympics, using a blood test that had been developed and validated in partnership with the IOC and USADA. (World Anti Doping Agency, “Minutes of the WADA Executive Committee Meeting,” Nov. 20, 2004, p. 20, available at [<http://www.wada-ama.org/rtecontent/document/201104-ENG.pdf>].)
- i. The detail and extent of an anti-doping policy’s list of prohibited substances and methods vary from organization to organization. One possible reason for variations among the lists is that some substances may benefit only athletes in certain sports. For example, beta-blockers, which decrease the heart rate and may aid in decreasing tremors or shaking, may be used by athletes who participate in sports that reward precision and accuracy, such as archery.

- j. The use of the term “steroids” in this context refers to anabolic or anabolic androgenic steroids, substances which may help an athlete increase his or her muscle size and strength and recover more quickly from injury. The class of substances known as “steroids” includes other types of substances. See “anabolic androgenic steroids” and “steroids” in the glossary.
- k. Designer steroids are mentioned for the first time in the 2006 policy. The following excerpt from the policy shows, through the addition of italics, the language that was added: “Anabolic androgenic steroids that are not covered by Schedule II but that may not be lawfully obtained *or used in the United States (including “designer steroids”)* shall also be considered Performance Enhancing Substances covered by the Program.” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement*, p. 4.)
- l. The Olympic movement’s policy is a good example of the fact that doping policies are dynamic. In commenting on changes made to its 2006 list of prohibited substances, WADA stated: “The status of both human chorionic gonadotrophin (hCG) and luteinizing hormone (LH) is changed and both substances are now only prohibited in males. Despite the scientific rationale to prohibit these substances in women, the experience during 2005 has led, in some cases, to detect elevated hCG levels due to physiological (pregnancy) or pathological conditions with potentially significant psychological or social consequences for the athlete, in addition to the difficulty, to date, to discriminate at the laboratory level these cases from doping abuse.” (World Anti-Doping Agency, *WADA Prohibited List, 2006: Summary of Major Modifications*, 2005, available at [http://www.wada-ama.org/rtecontent/document/Explanatory_Note_2006.pdf], p. 2.)
- m. As an example of how the lists of prohibited substances vary from organization to organization, it appears that the only hormone included on Major League Baseball’s list of performance enhancing substances. The WADA list includes several other hormones and related substances. (World Anti-Doping Agency, *The 2007 Prohibited List, International Standard*, Sep. 2006, available at [http://www.wada-ama.org/rtecontent/document/2007_List_En.pdf].)
- n. The list of prohibited substances includes any and all drugs or substances included on Schedules I and II of controlled substances (see 21 U.S.C. § 812). It is unclear whether any substances known as “beta-2 agonists” are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- o. The NBA’s list of steroids, performance enhancing drugs, and masking agents (SPEDs) does not appear to include any beta-2 agonists or beta blockers. However, the list includes zilpaterol, which, based on a search of the Internet, appears to be a pharmaceutical for animals. (K.C.M. Verhoeckx, R.P. Doornbos, J. Van Der Greer, R.F. Witkamp, and R.J.T. Rodenburg, “Inhibitory Effects of the β_2 -Andrenergic Receptor Agonist Zilpaterol on the LPS-Induced Production of TNF- α *in vitro* and *in vivo*,” *Journal of Veterinary Pharmacology and Therapeutics*, Dec. 2005, p. 531, available at [<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-2885.2005.00691.x>].)
- p. The list of prohibited substances includes any and all drugs or substances included on Schedules I and II of controlled substances (see 21 U.S.C. § 812). It is unclear whether any substances known as agents with anti-estrogenic activity are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- q. Masking substances (and methods) are not identified on the list of prohibited substances, but the policy states that a test will be considered “positive” if “[a] Player attempts to substitute, dilute, mask, or adulterate a specimen sample or in any other manner alter a test.... The presence of a diuretic or masking agent in a Player’s sample shall be treated as a positive test result if the Independent Program Administrator determines that the Player intended to avoid detection of his use of a Prohibited Substance.” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement*, p. 8.) However, unlike Olympics testing, it is unclear whether baseball players are tested for masking agents and methods.
- r. Apparently, a decision regarding how to treat erythropoietin (EPO) is pending. The following paragraph is included in baseball’s 2006 policy: “The Medical Testing Officer randomly selected 200 samples collected pursuant to Section 3.A.1. [this section involves testing for performance enhancing substances and stimulants] during the 2005 Testing Year for an additional screening for the presence of Erythropoietin (“EPO”). The Medical Testing Officer shall report the results of such testing, on an anonymous, aggregate basis, to the Party Representatives [the parties are Major League Baseball and the players association] when such testing has been completed and the Parties shall then determine the appropriate treatment of EPO.” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement*, p.6.)

- s. The NBA's policy states that "[i]f the player attempts to substitute, dilute, or adulterate a specimen sample or in any other manner [alter] a test result....," or "[i]f the test is positive for a Diuretic, and it is confirmed by laboratory analysis at any detectable level," the test result will be considered positive. (National Basketball Association and National Basketball Players Association, *Collective Bargaining Agreement*, p. 366.)
- t. The list of prohibited substances includes any and all drugs or substances included on Schedules I and II of controlled substances (see 21 U.S.C. § 812). It is unclear whether any substances known as "glucocorticosteroids" are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- u. The list of prohibited substances includes any and all drugs or substances included on Schedules I and II of controlled substances (see 21 U.S.C. § 812). It is unclear whether any substances known as "beta-blockers" are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- v. Major League Baseball and the players association agreed, in spring 2004, to have all drug testing conducted by the Doping Control Laboratory at the INRS-Institute Armand-Frappier Research Center in Montreal. This is a WADA-accredited laboratory. (Major League Baseball, "MLB Drug-Testing Programs Move to Olympic-Certified Laboratories," May 11, 2004, available at [http://www.mlb.com/news/press_releases/press_release.jsp?ymd=20040511&content_id=740823&vkey=pr_mlb&fext=.jsp&c_id=mlb].)
- w. The Substance Abuse and Mental Health Services Administration is an agency within the Department of Health and Human Services.
- x. Both laboratories are accredited by WADA.
- y. Although the NBA's policy does not include penalties for diuretics, it states that a positive test for a diuretic is considered a positive test for a prohibited substance. (National Basketball Association and National Basketball Players Association, *Collective Bargaining Agreement*, pp. 365-366, 382-383.)
- z. In addition to imposing a penalty or sanction for a positive test, in some instances professional sports leagues also require their players to enter a treatment program.
- aa. This sanction is specific to Articles 2.1 (presence of a prohibited substance in an athlete's specimen), 2.2 (use or attempted use of a prohibited substance or a prohibited method), and 2.6 (possession of prohibited substances and methods) in the WADA Code. For the list of sanctions imposed for other violations, see the WADA Code, pp. 27-35. An athlete who has been banned under the WADA Code has been declared ineligible. An athlete's status during eligibility is as follows: "No Person who has been declared ineligible may, during the period of ineligibility, participate in any capacity in a Competition or activity (other than authorized anti-doping education or rehabilitation programs) authorized or organized by a Signatory or Signatory's member organization" (p. 35). Signatories are those organizations that have signed and agreed to comply with the WADA Code and include "the International Olympic Committee, International Federations, International Paralympic Committee, National Olympic Committees, National Paralympic Committees, Major Event Organizations, National Anti-Doping Organizations, and WADA." (World Anti-Doping Agency, *World Anti-Doping Code*, 2003, available at [http://www.wada-ama.org/rtecontent/document/code_v3.pdf], pp. 35, 75.) For example, the list of organizations that have accepted the WADA Code includes the International Fencing Federation, International Swimming Federation, International Tennis Federation, and the International Federation of Associated Wrestling Styles. (World Anti-Doping Agency, "List of Sports Organizations Who Have Accepted the Code," n.d., available at [[http://www.wada-ama.org/en/dynamic.ch2?page Category.id=270](http://www.wada-ama.org/en/dynamic.ch2?page%20Category.id=270)].)
- bb. Any positive test result reported before the first reporting date for spring training in 2006 is not to be considered when determining the number of times a player has tested positive for performance enhancing substances or stimulants. (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement*, p. 17.)

Table 2. Comparison of Selected Features of Anti-Doping Policies

	Olympic Movement	National Hockey League (NHL) and National Hockey League Players Association (NHLPA)	Women’s National Basketball Association (WNBA) and Women’s National Basketball Players Association (WNBPA)	Major League Soccer (MLS) and Major League Soccer Players Union (MLSPU)
<p>— What organization or individual is responsible for administering the anti-doping policy?</p> <p>— Is the organization or individual independent from the sponsoring organization(s)?</p>	<p>— U.S. Anti-Doping Agency (for American athletes).</p> <p>— Yes.</p> <p><small>http://wikileaks.org/wiki/CRS-RL32894</small></p>	<p>— Program Committee.</p> <p>— No. The committee consists of an equal number of league and players association representatives, and one doctor.</p>	<p>— Medical director.</p> <p>— No. The medical director is selected jointly by the WNBA and WNBPA.</p>	<p>— Qualified doctors and a certified substance abuse and behavioral health counselor, who are identified collectively as Substance Abuse and Behavioral Health (SABH) Program professionals by the MLS.</p> <p>— No. The SABH program professionals are selected jointly by the commissioner (or his or her designee) and the players union.</p>
Is testing conducted off-season (or out of competition, for the Olympics)?	Yes.	No.	No.	Unclear. ^a
Is an athlete responsible for prohibited substances found in his or her body?	Yes.	No. ^b	Subject is not addressed in the policy.	No. ^c
Does the responsible organization test athletes for all prohibited substances? ^{de}	No.	Yes.	Yes.	Yes.

	Olympic Movement	National Hockey League (NHL) and National Hockey League Players Association (NHLPA)	Women's National Basketball Association (WNBA) and Women's National Basketball Players Association (WNBPA)	Major League Soccer (MLS) and Major League Soccer Players Union (MLSPU)
Does the anti-doping policy prohibit: ^f				
— Steroids ^g	— Yes.	— Yes.	— Yes.	— Yes.
— Hormones and related substances	— Yes. ^h	— Yes.	— No.	— Yes.
— Beta-2 agonists	— Yes.	— Yes.	— No.	— Yes.
— Agents with anti-estrogenic activity	— Yes.	— Yes.	— No.	— Yes.
— Diuretics and other masking agents	— Yes.	— Yes.	— Unclear. ⁱ	— Yes.
— Enhancement of oxygen transfer	— Yes.	— Yes.	— No.	— Yes.
— Chemical and physical manipulation	— Yes.	— Yes.	— Unclear. ⁱ	— Yes.
— Gene doping	— Yes.	— Yes.	— No.	— Yes.
— Stimulants	— Yes, but only in competition.	— No. ^j	— Yes.	— Yes.
— Glucocorticosteroids	— Yes, but only in competition.	— No.	— No.	— Yes. ^k
— Beta-blockers	— Yes, but only for certain sports.	— No.	— No.	— Yes.

	Olympic Movement	National Hockey League (NHL) and National Hockey League Players Association (NHLPA)	Women's National Basketball Association (WNBA) and Women's National Basketball Players Association (WNBPA)	Major League Soccer (MLS) and Major League Soccer Players Union (MLSPU)
What laboratory tests the samples?	WADA-accredited laboratories or as otherwise approved by WADA. <small>http://wiki.levihs.org/wiki/CRS-RL32894</small>	Laboratoire de Controle du Dopage, INRS-Institut Armand Frappier. ¹	Laboratories are selected by the medical director and approved by the WNBA and WNBPA.	Laboratories in the United States are selected by the SABH program professionals. Laboratories must be certified by the Substance Abuse and Mental Health Services Administration (SAMSHA), the U.S. Department of Transportation, or the World Anti-Doping Agency. ^m
Are sanctions applicable to all prohibited substances?	Yes.	Yes.	Yes.	Yes.
What are the sanctions for testing positive? — First violation ^{dn} — Second violation	— Two-year ban. ^o — Lifetime ban.	— 20-game suspension without pay. — 60-game suspension without pay.	— Steroids: Two-game suspension. Androstenedione, DHEA, and testosterone: One-game suspension. — Steroids: Five-game suspension. Androstenedione, DHEA, and testosterone: Three-game suspension.	— Discipline may include up to and including, without limitation, fines, suspension (with or without pay), and/or termination of the player's contract. ^p — See above.

	Olympic Movement	National Hockey League (NHL) and National Hockey League Players Association (NHLPA)	Women's National Basketball Association (WNBA) and Women's National Basketball Players Association (WNBPA)	Major League Soccer (MLS) and Major League Soccer Players Union (MLSPU)
— Third violation	— Not applicable.	— Permanent suspension.	— Steroids: 10-game suspension. Androstenedione, DHEA, and testosterone: 7-game suspension.	— See above.
— Fourth violation	— Not applicable.	— Not applicable.	— Steroids: Same as third violation. Androstenedione, DHEA, and testosterone: same as third violation.	— See above.
— Subsequent violation(s)	— Not applicable.	— Not applicable.	— Steroids: Same as third violation. Androstenedione, DHEA, and testosterone: same as third violation.	— See above.
What types of specimens are collected and tested?	Blood or urine.	Urine.	Urine.	Urine.

Sources: U.S. Anti-Doping Agency, *United States Anti-Doping Agency Protocol for Olympic Movement Testing*, revised Aug. 13, 2004, available at [<http://www.usantidoping.org/files/active/what/protocol.pdf>]; U.S. Anti-Doping Agency, "USADA Press Kit," Sep. 13, 2007, available at [http://www.usantidoping.org/files/active/resources/press_kits/2007%20fact%20sheet_updated%20september%2013,%202007.pdf]; World Anti-Doping Agency, *World Anti-Doping Code*, 2003, available at [http://www.wada-ama.org/rtecontent/document/code_v3.pdf]; World Anti-Doping Agency, *International Standard for Testing*, June 2003, available at [http://www.wada-ama.org/rtecontent/document/testing_v3_a.pdf]; World Anti-Doping Agency, *The 2007 Prohibited List, International Standard*, 2005, available at [http://www.wada-ama.org/rtecontent/document/2007_List_En.pdf]; Letter from William L. Daly, Deputy Commissioner, National Hockey League, to the author, Apr. 21, 2006; National Hockey League and National Hockey League Players Association, *Collective Bargaining Agreement*, 2005, available from author; Major League Soccer and Major League Soccer Players Union, *Major League Soccer Player Substance Abuse and Behavioral Health Program and Policy*, n.d.; Women's National Basketball Association and Women's National Basketball Players Association, *Women's National Basketball Association Collective Bargaining Agreement*, n.d., available from author.

Notes:

- a. The MLS's policy states: "All Players are subject to unannounced Prohibited Substance testing. Such testing may be based either on random selection or by testing the entire Team." (Major League Soccer and Major League Soccer Players Union, *Major League Soccer Player Substance Abuse and Behavioral Health Program and Policy*, n.d., p. 6) In congressional testimony, the head of the players union stated: "Testing includes: (a) random testing, in which players are tested at least once each year" (Testimony of Bob Foose, Executive Director, Major League Soccer Players Union, in U.S. Congress, House Energy and Commerce Committee, Subcommittee on Commerce, Trade, and Consumer Protection, *The Drug Free Sports Act of 2005*, hearing on H.R. 1862, 109th Cong., 1st sess., May 18 and 19, 2005, (Washington: GPO, 2005), p. 25.) At the same hearing, the MLS commissioner stated: "We conduct year-round testing without prior notice. Each player is tested at least once with no limit on tests." (Testimony of Don Garber, Commissioner of Major League Soccer, in U.S. Congress, House Energy and Commerce Committee, Subcommittee on Commerce, Trade, and Consumer Protection, *The Drug Free Sports Act of 2005*, p. 19.)
- b. The NHL's policy states: "A strict liability standard will be employed with respect to all positive tests. Notwithstanding the above, the Player shall be entitled to challenge the imposition of any discipline in the event he is able to establish an applicable therapeutic use exemption ..., a testing error, mistaken use, or the use of a tainted supplement or other production (i.e., where the Player could not have reasonably ascertained the presence of the Prohibited Substance). (National Hockey League and National Hockey League Players Association, *Collective Bargaining Agreement*, 2005, available from author.)
- c. Apparently, MLS does not have strict liability for what a player has ingested. Speaking at a congressional hearing in 2005, the league's commissioner said: "We ... believe that disciplinary discretion is important, because mandatory minimum standards may create unjust results given the presence of very real mitigating circumstances. In some cases, a 2-year suspension might be too harsh. For example, we do not believe it is appropriate to impose the same suspension on a player who knowingly uses performance-enhancing substances as a player who unknowingly ingested a tainted nutritional supplement..." (Testimony of Don Garber, Commissioner of Major League Soccer, in U.S. Congress, House Energy and Commerce Committee, Subcommittee on Commerce, Trade, and Consumer Protection, *The Drug Free Sports Act of 2005*, p. 20.)
- d. Even though most anti-doping policies include non-performance-enhancing substances or drugs, such as marijuana, Ecstasy, and opiates, this item pertains only to performance-enhancing substances and related substances and methods.
- e. In some cases, accurate laboratory tests do not exist for certain prohibited substances or levels. In other cases, tests are available to detect the prohibited substances but are not used. See **Table 1**, table note h.
- f. The detail and extent of an anti-doping policy's list of prohibited substances and methods vary from organization to organization. One possible reason for variations among the lists is that some substances may benefit only athletes in certain sports. For example, beta-blockers, which decrease the heart rate and may aid in decreasing tremors or shaking, may be used by athletes who participate in sports that reward precision and accuracy, such as archery.
- g. The use of the term "steroids" in this context refers to anabolic or anabolic androgenic steroids, substances which may help an athlete increase his or her muscle size and strength and recover more quickly from injury. The class of substances known as "steroids" includes other types of substances. See "anabolic androgenic steroids" and "steroids" in the glossary.
- h. The Olympic movement's policy is a good example of the fact that doping policies are dynamic. In commenting on changes made to its 2006 list of prohibited substances, WADA stated: "The status of both human chorionic gonadotrophin (hCG) and luteinizing hormone (LH) is changed and both substances are now only prohibited in males. Despite the scientific rationale to prohibit these substances in women, the experience during 2005 has led, in some cases, to detect elevated hCG levels due to physiological (pregnancy) or pathological conditions with potentially significant psychological or social consequences for the athlete, in addition to the difficulty, to date, to discriminate at the laboratory level these cases from doping abuse." (World Anti-Doping Agency, *WADA Prohibited List, 2006: Summary of Major Modifications*, 2005, available at [http://www.wada-ama.org/rtecontent/document/Explanatory_Note_2006.pdf], p. 2.)
- i. No masking agents or diuretics are included on the WNBA's list of prohibited substances, but the policy states that "[i]f the player attempts to substitute, dilute, mask, or adulterate a specimen sample or in any other manner alter[s] a test result," the test will be considered positive for a prohibited substance. (Women's National Basketball Association and Women's National Basketball Players Association, *Women's National Basketball Association Collective Bargaining Agreement*, n.d., Exhibit 2, Sec. 4(c), available from author.)

- j. The NHL uses WADA’s out-of-competition list of prohibited substances, which does not include stimulants.
- k. In its doping policy, MLS includes “glucosteroids” on its list of prohibited substances. This may be a misspelling, as the commonly used terms are “glucocorticosteroids” or “glucocorticoids.” (Information provided electronically by the U.S. Anti-Doping Agency, to the author, on Apr. 18, 2006.)
- l. This is a World Anti-Doping Agency-accredited laboratory located in Montreal.
- m. The Substance Abuse and Mental Health Services Administration is an agency within the Department of Health and Human Services.
- n. In addition to imposing a penalty or sanction for a positive test, in some instances professional sports leagues also require their players to enter a treatment program.
- o. This sanction is specific to Articles 2.1 (presence of a prohibited substance in an athlete’s specimen), 2.2 (use or attempted use of a prohibited substance or a prohibited method), and 2.6 (possession of prohibited substances and methods) in the WADA *Code*. For the list of sanctions imposed for other violations, see the WADA *Code*, pp. 27-35. An athlete who has been banned under the WADA *Code* has been declared ineligible. An athlete’s status during eligibility is as follows: “No Person who has been declared ineligible may, during the period of ineligibility, participate in any capacity in a Competition or activity (other than authorized anti-doping education or rehabilitation programs) authorized or organized by a Signatory or Signatory’s member organization” (p. 35). Signatories are those organizations that have signed and agreed to comply with the WADA *Code* and include “the International Olympic Committee, International Federations, International Paralympic Committee, National Olympic Committees, National Paralympic Committees, Major Event Organizations, National Anti-Doping Organizations, and WADA.” (World Anti-Doping Agency, *World Anti-Doping Code*, 2003, available at [http://www.wada-ama.org/rtecontent/document/code_v3.pdf], pp. 35, 75.) For example, the list of organizations that have accepted the WADA *Code* includes the International Fencing Federation, International Swimming Federation, International Tennis Federation, and the International Federation of Associated Wrestling Styles. (World Anti-Doping Agency, “List of Sports Organizations Who Have Accepted the Code,” n.d., available at [[http://www.wada-ama.org/en/dynamic.ch2?page Category.id=270](http://www.wada-ama.org/en/dynamic.ch2?page%20Category.id=270)].)
- p. Major League Soccer does not have any explicit sanctions for first, second, third offenses and so on. (Major League Soccer and Major League Soccer Players Union, *Major League Soccer Player Substance Abuse and Behavioral Health Program and Policy*, pp. 10-11.)

Elements of Model Anti-Doping Policies

Experts in the field of drug testing and policy have described what they believe to be the requisite elements of an effective anti-doping policy. For example, speaking at a Senate committee hearing in 2004, the Chief Executive Officer of USADA said such a policy:

... begins with a sample collection plan that includes appropriately timed, year-round, no-advance-notice testing. The plan must provide for the collection of samples at the time that athletes most benefit from doping and must be flexible and responsive to evolving doping techniques.

... must be built around a comprehensive list of categories of prohibited substances and methodsprograms must incorporate sufficient flexibility to deal with the creation and use of 'designer drugs'.... Therefore, the continued dedication of resources to the testing laboratories that are charged with developing and validating testing methods for this wide array of substances is an important aspect of deterrence.

... also combines defined sanctions of sufficient magnitude to deter drug use with a fair means of imposing such sanctions Significantly, while USADA believes the privacy rights of individuals accused of a doping violation must be respected, no individual's right should outweigh the rights of all athletes to compete in clean sport and to be assured that those who break the rules are appropriately sanctioned.

... [provides for] the education of athletes as to why healthy competition is important and why taking the uninformed health risks associated with prohibited substances is a bad choice. The achievements in sports, like the achievements in life, should be the result of hard work, commitment, and dedication.

... must devote significant resources to research for the detection of new doping substances and techniques and the pursuit of scientific excellence in doping control.²⁰

Similarly, General Barry R. McCaffrey, U.S. Army (ret.), then-Director, Office of National Drug Control Policy, appeared at a Senate hearing in 1999 and stated that, with regard to international competition, the agency was focused on achieving these principles:

- A truly independent and accountable international anti-doping agency;
- Testing on a 365-day-a-year, no notice basis;
- No statute of limitations — whenever evidence becomes available that an athlete cheated by doping, the athlete will be stripped of his or her honors;

²⁰ U.S. Congress, Senate Committee on Commerce, Science and Transportation, *Steroid Use in Professional and Amateur Sports*, Mar. 10, 2004, 108th Cong., 2nd sess., statement of Terry Madden, Chief Executive Officer, United States Anti-Doping Agency, unpublished, available from the author.

- Deterrence through the preservation of samples for at least 10 years — while a dishonest athlete may be able to defeat today’s drug test, he or she has no way to know what will be detectable through tomorrow’s scientific advances; and,
- Advanced research to end the present cat-and-mouse game of doping by closing the loopholes created by gaps in science.²¹

Conclusion

Combining elements of Madden’s and McCaffrey’s plans, such as a well-thought-out sample collection plan and a comprehensive list of prohibited substances, could result in an anti-doping program that would increase the probability of catching athletes who use prohibited substances, which, in turn, might also increase athletes’ perceived risk of being caught. For example, requiring that samples be preserved for at least 10 years could aid in identifying athletes who have used performance-enhancing substances that were undetectable previously. As the investigation of the Bay Area Laboratory Co-Operative (BALCO) has shown, it is possible for individuals to develop what are known as designer steroids — substances that are advertised as providing effects similar to steroids, but are not identifiable by conventional laboratory tests.²² A 10-year (or longer) retention period could help in closing this gap, particularly if it is accompanied by an aggressive research program aimed at detecting, and developing tests for, previously unknown substances. Also, imposing sanctions of sufficient magnitude and providing an education program on health risks could help to counterbalance incentives that might prompt athletes to use prohibited substances. Finally, establishment of an independent agency to manage testing, education, and research appears to be vital to a successful anti-doping program. It would seem desirable to place these functions in an organization independent from the organization that is responsible for supporting or employing athletes and that benefits directly, or even indirectly, from their performances.

While the anti-doping initiative of the Olympic movement includes many of these elements, it is uncertain whether major professional sports leagues in the United States, such as Major League Baseball and the NBA and NFL, are in a position to take similar steps. Public pressure and congressional interest may have played a role in prompting Major League Baseball and the players association to reopen their collective bargaining agreement in 2005 and modify the league’s anti-doping policy. One notable outcome was a change in the sanctions imposed on players caught using steroids.

²¹ U.S. Congress, Senate Committee on Commerce, Science, and Transportation, *Effects of Performance Enhancing Drugs on the Health of Athletes and Athletic Competition*, 106th Cong., 1st sess., Oct. 20, 1999 (Washington: GPO, 2002), p. 21.

²² Steve Fawner, “A Search for Truth in Substance,” *Washington Post*, Dec. 4, 2003, pp. D1, D10.

Appendix

Table 3. Comparison of Selected Features of Major League Baseball's 2003-2004, 2005, and 2006 Policies

	2003-2004 Policy	2005 Policy	2006 Policy
<p>— What organization or individual is responsible for administering the anti-doping policy?</p> <p>— Is the organization or individual independent from the sponsoring organization(s)?</p>	<p>— Health Policy Advisory Committee (HPAC).</p> <p>— No. MLB and MLBPA each selected two members of the HPAC.</p>	<p>— HPAC.</p> <p>— No. MLB and MLBPA each selected two members of the HPAC.</p>	<p>— Independent Program Administrator (IPA).</p> <p>— No. MLB and MLBPA jointly select the IPA.^a</p>
Does the responsible organization test players for all prohibited substances? ^{b,c}	No.	No.	No. ^d
Does the anti-doping policy prohibit:			
— Steroids ^e	— Yes.	— Yes.	— Yes ^f
— Hormones and related substances	— Unclear. ^g	— Yes. ^g	— Yes.
— Beta-2 agonists	— Unclear. ^h	— Unclear. ^h	— Unclear. ⁱ
— Agents with anti-estrogenic activity	— Unclear. ^j	— Unclear. ^j	— Unclear. ^k
— Diuretics and other masking agents	— Yes. ^l	— Unclear. ^m	— Yes. ⁿ

	2003-2004 Policy	2005 Policy	2006 Policy
<ul style="list-style-type: none"> — Enhancement of oxygen transfer — Chemical and physical manipulation — Gene doping — Stimulants — Glucocorticosteroids — Beta-blockers 	<ul style="list-style-type: none"> — No. — Yes.^l — No. — Unclear.^p — Unclear.^r — Unclear.^t 	<ul style="list-style-type: none"> — No. — Unclear.^m — No. — Unclear, except for ephedra, which was prohibited but not tested.^q — Unclear.^r — Unclear.^t 	<ul style="list-style-type: none"> — No.^o — Yes.ⁿ — No. — Yes. — Unclear.^s — Unclear.^u
Is a player responsible for what is in his body?	Unclear. ^v	Subject was not addressed in the policy.	No. ^w
What laboratory tests the samples?	Subject was not addressed in the policy.	Subject was not addressed in the policy, but MLB has indicated that testing is conducted at a WADA-accredited laboratory in Montreal. ^x	Subject is not addressed in the policy, but MLB has indicated that testing is conducted at a WADA-accredited laboratory in Montreal. ^x
Are sanctions applicable to all prohibited substances?	No. ^y	No. ^y	Yes.

	2003-2004 Policy	2005 Policy	2006 Policy
<p>What are the sanctions for testing positive for steroids, or stimulants?^{z,aa}</p> <p>— First violation</p> <p>— Second violation</p> <p>— Third violation</p> <p>— Fourth violation</p> <p>— Fifth violation</p> <p style="text-align: center;">http://wikileaks.org/wiki/CRS-RL32894</p>	<p>— Player placed on clinical track (treatment program).</p> <p>— 15-day suspension without pay or a maximum fine of \$10,000.</p> <p>— 25-day suspension without pay or a maximum fine of \$25,000.</p> <p>— 50-day suspension without pay or a maximum fine of \$50,000.</p> <p>— One-year suspension without pay or a maximum fine of \$100,000.</p>	<p>— Steroids: 10-day suspension without pay.</p> <p>— 30-day suspension without pay.</p> <p>— 60-day suspension without pay.</p> <p>— One-year suspension without pay.</p> <p>— MLB Commissioner imposes further discipline.</p>	<p>— Steroids: 50-game suspensions without pay. Stimulants: No sanction.^{bb}</p> <p>— Steroids: 100-game suspension without pay. Stimulants: 25-game suspension without pay.^{bb}</p> <p>— Steroids: Permanent suspension from MLB. Stimulants: 80-game suspension without pay.^{bb}</p> <p>— Stimulants: Suspension by the Commissioner, up to permanent suspension^{bb}</p> <p>— Subject is not addressed.</p>
Is testing conducted during the off-season?	No.	Yes.	Yes. ^{cc}
What types of specimens are collected and tested?	Urine.	Urine.	Urine.

Sources: Original and two revisions of Major League Baseball’s drug policy, which is Attachment 18 of the collective bargaining agreement negotiated by Major League Baseball and the Major League Baseball Players Association. Neither the drug policies nor the CBA is dated, so each policy is identified by the year or years it was, or is, in effect: 2003-2004 (original), 2005 (first revision), and 2006 (second revision). All three versions are available from the author.

Notes:

- a. Although Major League Baseball and the players association select the independent program administrator (IPA), the policy states that this individual “shall have no affiliation with the Office of the Commissioner, any Major League Club or the [Players] Association.” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2006 policy), n.d., available from the author.)
- b. Even though most anti-doping policies include non-performance-enhancing substances or drugs, such as marijuana, Ecstasy, and opiates, this item pertains only to performance-enhancing substances and related substances and methods.
- c. In some cases, accurate laboratory tests do not exist for certain prohibited substances or levels. In other cases, tests are available to detect the prohibited substances but are not used. See **Table 1**, table note h.
- d. Human growth hormone (hGH) is on the list of prohibited substances, under the heading “steroids,” but MLB does not test for it. In testimony offered during a House Committee on Government Reform hearing, Robert D. Manfred Jr., Executive Vice President, MLB, and Elliot J. Pellman, M.D., Medical Advisor to the Commissioner of Baseball, indicated that Major League Baseball does not test for human growth hormone (hGH). The rationale they offered was that no valid urine-based test exists. Mr. Manfred added: “Contrary to published reports, there is not an available, verified test for HGH, even with a blood sample.” (U.S. Congress, House Committee on Government Reform, statements of Robert D. Manfred Jr., Executive Vice President, Major League Baseball, and Elliot J. Pellman, M.D., Medical Advisor to the Commissioner of Baseball, unpublished hearing, 109th Cong., 1st sess., Mar. 17, 2005, available online at [http://oversight.house.gov/features/steroids/testimony_manfred.pdf] and [http://oversight.house.gov/features/steroids/testimony_pellman.pdf].) It should be noted that the World Anti-Doping Agency tested athletes for hGH at the 2004 Athens Olympics, using a blood test that had been developed and validated in partnership with the IOC and USADA. (World Anti-Doping Agency, “Minutes of the WADA Executive Committee Meeting,” Nov. 20, 2004, p. 20, at [<http://www.wada-ama.org/rtecontent/document/201104-ENG.pdf>].)
- e. The use of the term “steroids” in this context refers to anabolic or anabolic androgenic steroids, substances which may help an athlete increase his or her muscle size and strength and recover more quickly from injury. The class of substances known as “steroids” includes other types of substances. See “anabolic androgenic steroids” and “steroids” in the glossary.
- f. Designer steroids are mentioned for the first time in the 2006 policy. The following excerpt from this policy shows, through the use of italics, language that was added to the policy: “Anabolic androgenic steroids that are not covered by Schedule II but that may not be lawfully obtained *or used in the United States (including “designer steroids”)* shall also be considered Performance Enhancing Substances covered by the Program.” (Italics added to show new language.) (Ibid., p. 4.)
- g. The list of prohibited substances included all of Schedule II and an extensive list of substances from Schedule I. It is unclear whether any substances known as “hormones” are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- h. The list of prohibited substances included all of Schedule II and an extensive list of substances from Schedule I. It is unclear whether any substances known as “beta-2 agonists” are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- i. The list of prohibited substances includes any and all drugs or substances included on Schedule I and Schedule II. It is unclear whether any substances known as “beta-2 agonists” are listed on either of these schedules. Efforts to obtain clarification from Major League Baseball or the players association are continuing.
- j. The list of prohibited substances included all of Schedule II and an extensive list of substances from Schedule I. It is unclear whether any substances known as “agents with anti-estrogenic activity” are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- k. The list of prohibited substances includes any and all drugs or substances included on Schedule I and Schedule II. It is unclear whether any substances known as “agents with anti-estrogenic activity” are listed on either of these schedules. Efforts to obtain clarification from Major League Baseball or the players association are continuing.

- l. Masking substances (and methods) are not identified on the list of prohibited substances, but the policy states that any test will be considered “positive” if a player “attempts to substitute, dilute, mask, or adulterate a specimen sample or in any other manner alter a test.” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2004-2004 policy), n.d., available from the author, p. 164.)
- m. Masking substances (and methods) are not identified on the list of prohibited substances, but the policy states any test will be considered “positive” if a player “attempts to substitute, dilute, mask, or adulterate a specimen sample or in any other manner alter a test.” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2005 policy), n.d., available from the author, p. 6.)
- n. Masking substances (and methods) are not identified on the list of prohibited substances, but the policy states that a test will be considered “positive” if “[a] Player attempts to substitute, dilute, mask, or adulterate a specimen sample or in any other manner alter a test.... The presence of a diuretic or masking agent in a Player’s sample shall be treated as a positive test result if the Independent Program Administrator determines that the Player intended to avoid detection of his use of a Prohibited Substance.” Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2006 policy), p. 8.) However, unlike Olympics testing, it is unclear whether baseball players are tested for masking agents and methods.
- o. Apparently, a decision regarding how to treat erythropoietin (EPO) is pending. The following paragraph is included in baseball’s 2006 policy: “The Medical Testing Officer randomly selected 200 samples collected pursuant to Section 3.A.1. [this section involves testing for performance enhancing substances and stimulants] during the 2005 Testing Year for an additional screening for the presence of Erythropoietin (“EPO”). The Medical Testing Officer shall report the results of such testing, on an anonymous, aggregate basis, to the Party Representatives [the parties are Major League Baseball and the players association] when such testing has been completed and the Parties shall then determine the appropriate treatment of EPO.” (Ibid., p. 6.)
- p. The list of prohibited substances included all of Schedule II and an extensive list of substances from Schedule I. It is unclear whether any substances known as “stimulants” are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- q. Ephedra was a prohibited substance, but it was not included in regular testing of players. (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2005 policy), pp. 5 and 6.) See table note c. above.
- r. The list of prohibited substances included all of Schedule II and an extensive list of substances from Schedule I. It is unclear whether any substances known as “glucocorticosteroids” are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- s. The list of prohibited substances includes any and all drugs or substances included on Schedule I and Schedule II. It is unclear whether any substances known as “glucocorticosteroids” are listed on either of these schedules. Efforts to obtain clarification from Major League Baseball or the players association are continuing.
- t. The list of prohibited substances included all of Schedule II and an extensive list of substances from Schedule I. It is unclear whether any substances known as “beta-blockers” are listed on either of these schedules. Efforts to obtain clarification from Major League Baseball or the players association are continuing.
- u. The list of prohibited substances includes any and all drugs or substances included on Schedule I and Schedule II. It is unclear whether any substances known as “beta-blockers” are listed on either of these schedules. Efforts to obtain clarification on this matter from Major League Baseball or the players association are continuing.
- v. Absent an explicit statement about a player’s responsibility for what is in his body, the following excerpt suggests that, depending upon the circumstances, a player’s claim that a positive test resulted from a contaminated over-the-counter supplement could have been valid: “If ... a Player tests positive in the initial test for a Steroid and such positive test cannot be a result of a Player taking an over-the-counter supplement, the initial test shall be considered a positive result regardless of the outcome of the follow-up test.” (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2003-2004 policy), p. 162.)
- w. The Office of the Commissioner has an initial burden to establish “that a Player’s test result was ‘positive’ ... and was obtained pursuant to a valid test conducted under Attachment 18 [the anti-doping policy]. The Office of the Commissioner is not required to otherwise establish intent, fault, negligence or knowing use of a Prohibited Substance on the

Player's part to establish such a violation. If the Office of the Commissioner meets its initial burden, the Player then has the burden of establishing that his test result was not due to his fault or negligence." (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2006 policy), pp. 19-20.)

- x. Major League Baseball and the players association agreed, in spring 2004, to have all drug testing under the *MLB Joint Drug Prevention and Testing Program* conducted by the Doping Control Laboratory at the INRS-Instituted Armand-Flapper Research Center in Montreal. This is a WADA-accredited laboratory. (Major League Baseball, "MLB Drug-Testing Programs Move to Olympic-Certified Laboratories," May 11, 2004, available at [http://www.mlb.com/news/press_releases/press_release.jsp?ymd=20040511&content_id=740823&vkey=pr_mlb&fext=.jsp&c_id=mlb].)
- y. Apparently, sanctions applied only to positive tests for steroids. As noted above, testing for other substances and drugs prohibited by the league was not done as part of its ongoing testing program. Though players could have been tested for these other substances when reasonable cause existed for doing so, no sanctions were included for positive tests of other substances.
- z. Even though Major League Baseball's policy includes non-performance-enhancing substances or drugs, such as marijuana, Ecstasy, and opiates, this item pertains only to performance-enhancing substances and related substances and methods.
- aa. A player who has used, or is suspected of using, stimulants may be placed in a treatment program. (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2006 policy), p. 9.)
- bb. Any positive test result reported before the first reporting date for spring training in 2006 is not to be considered when determining the number of times a player has tested positive for performance enhancing substances or stimulants. (Major League Baseball and Major League Baseball Players Association, *2003-2006 Basic Agreement* (2006 policy), p. 17.)
- cc. Under the heading "Additional Random Testing," the policy states that "as many as 60 tests may be conducted at unannounced times during the off-season ...; provided, however, that any off-season tests shall only be for the presence of Performance Enhancing Substances." (Ibid., p. 6.) Assuming that off-season testing would test 60 different players, approximately 8% of the players would be subjected to tests for performance enhancing substances during the off-season. Although the active player limit apparently is imposed only during the season, the active player limit of 25 players per team (that is, each team can have no more than 25 active players on its roster from opening day through midnight, August 31; the active player limit increases to 40 on September 1 each year) was used to calculate this percentage. (Ibid., p. 49.)

Glossary

Agents with anti-estrogenic activity — An agent with anti-estrogenic activity blocks the conversion of testosterone to estrogens (female hormones), or prevents or minimizes the body’s response to estrogens present in the body. A male athlete who uses steroids may ingest an agent with anti-estrogen activity to help mitigate breast development resulting from steroid use.²³

Anabolic androgenic steroids — “Anabolic-androgenic steroids [AAS] are synthetic derivatives of testosterone Testosterone itself is not effective when taken orally or by injection, because it is susceptible to relatively rapid breakdown by the liver. The chemical structure of testosterone has been modified by pharmaceutical companies and pharmacologists to surmount this problem.”²⁴ “‘Anabolic’ refers to muscle-building, and ‘androgenic’ refers to increased masculine characteristics.²⁵ Using steroids may help an individual increase his or her muscle size and strength and recover more quickly from injury.”²⁶ Also see “Steroids.”

Analogues (analogs) — “[S]ubstances derived from the modification or alteration of the chemical structure of another substance while retaining a similar pharmacological effect.”²⁷ For example, the chemical structure of a steroid analogue would differ from the structure of a steroid, but it would promote the development of muscle.

Beta-2 agonists — “Beta-agonists are bronchodilator medicines that open airways by relaxing the muscles around the airways that tighten during an asthma attack.”²⁸ Some beta-2 agonists, when taken into the bloodstream, “may have anabolic effects.”²⁹

²³ U.S. Anti-Doping Agency, *2005 Guide to Prohibited Substances and Prohibited Methods of Doping*, p. 25; William N. Taylor, *Anabolic Steroids and the Athlete*, 2nd ed. (Jefferson, NC: McFarland and Co., 2002), p. 35.

²⁴ Michael S. Bahrke and Charles E. Yesalis, “Anabolics,” in *Performance-Enhancing Substances in Sport and Exercise*, p. 33.

²⁵ National Institutes of Health, National Institute on Drug Abuse, “NIDA InfoFacts: Steroids (Anabolic-Androgenic),” n.d., available at [<http://www.nida.nih.gov/Infofax/steroids.html>].

²⁶ U.S. Anti-Doping Agency, “Medical,” n.d., available at [<http://www.usantidoping.org/resources/glossary/medical.aspx>].

²⁷ Australian Sports Drug Agency, “Substances: Hormones and Related Substances,” n.d., available at [<http://www.asada.gov.au/substances/facts/hormones.htm>].

²⁸ U.S. Anti-Doping Agency, “Medical.”

²⁹ Australian Sports Drug Agency, “Substances: Beta-2 Agonists,” n.d., available at [<http://www.asada.gov.au/substances/facts/beta2agonists.htm>]; Gordon S. Lynch, “Beta-2 Agonists,” in *Performance-Enhancing Substances in Sport and Exercise*, p. 47.

Beta-blockers — “Beta-blockers are commonly used for heart disease to lower blood pressure and decrease the heart rate, and may be used to decrease fine motor tremor.³⁰ Athletes may use beta-blockers illegally to try to stop their hands and bodies from shaking while competing in precision sports that require accuracy, a calm state and/or a steady hand.”³¹

Diuretics — “Diuretics remove the excess water from the body. They are used in sports where the athletes are categorized by their body weight....”³² Sports that have weight classes include wrestling, boxing, judo, and weightlifting. Diuretics also aid in diluting an athlete’s urine “so that the presence of performance-enhancing drugs, or their metabolic counterparts, cannot be detected.”³³

Doping control — “The process including test distribution planning, *Sample* collection and handling, laboratory analysis, results management, hearings and appeals.”³⁴ (“Doping control” is a term specific to WADA and the international sports community to describe efforts to eliminate the use of prohibited performance-enhancing substances and methods from sport.)³⁵

Enhancement of oxygen transfer — An athlete may increase his body’s oxygen capacity either by “artificially enhancing the uptake, transport, or delivery of oxygen,” such as through the ingestion of erythropoietin (see below), or through blood doping.³⁶ Blood doping involves the administration of blood cells. “Two to four units (one unit corresponds to 450 ml [milliliters] of whole blood are collected from the individual ... [and then] three to five days before the competition [the blood is] infused [into the individual].”³⁷

Ephedra — “Ephedra is a plant that contains the stimulants ephedrine and pseudoephedrine, which have been used by athletes to reduce physical fatigue, lose

³⁰ U.S. Anti-Doping Agency, “Medical.”

³¹ Australian Sports Drug Agency, “Substances: Beta Blockers,” n.d., available at [<http://www.asada.gov.au/substances/facts/betablockers.htm>].

³² U.S. Anti-Doping Agency, “Medical.”

³³ Lawrence E. Armstrong, “Diuretics,” in *Performance-Enhancing Substances in Sport and Exercise*, p. 111.

³⁴ World Anti-Doping Agency, *International Standard for Testing*, p. 8.

³⁵ Information provided electronically by the U.S. Anti-Doping Agency to the author on Apr. 8, 2005.

³⁶ U.S. Anti-Doping Agency, *2007 Guide to Prohibited Substances and Prohibited Methods of Doping*, 2006, p. 26, available at [<http://www.usantidoping.org/files/active/athletes/USADA%202007%20Prohibited%20Guide.pdf>].

³⁷ Björn T. Ekblom, “Blood Doping,” in *Performance-Enhancing Substances in Sport and Exercise*, pp. 94-95; U.S. Anti-Doping Agency, “Medical.”

weight and improve mental alertness.” Ephedra is available as a dietary supplement.³⁸

Epitestosterone — Epitestosterone, which is a natural steroid, plays an important role in testing an individual for the presence of excess testosterone. The ratio of testosterone to epitestosterone (T/E) usually is 1:1. A ratio of 6:1 or higher generally is an indication of illegal supplementation of testosterone.³⁹ (However, the World Anti-Doping Agency lowered its T/E threshold to 4:1 in 2005.⁴⁰)

Erythropoietin (EPO) — EPO, which is an alternative to blood doping, stimulates red blood cell production. It increases an individual’s aerobic power by increasing the number of his or her red blood cells to “unnatural levels.”⁴¹

Gene doping — “The non-therapeutic use of genes, genetic elements or of the modulation of gene expression, having the capacity to enhance athletic performance⁴² This includes attempts to modulate hormonal control of production of normal substances in the body, such as growth hormone or erythropoietin.”⁴³

Glucocorticosteroids — “Glucocorticosteroids are powerful anti-inflammatory agents,⁴⁴ [which] affect the metabolism, and athletes may use them to get more energy.”⁴⁵ Glucocorticosteroids are also known as glucocorticoids.

Human chorionic gonadotropin (hCG) — In males, hCG helps to stimulate the production of male hormones such as testosterone.⁴⁶ Male athletes may take hCG “to

³⁸ Mayo Clinic, “Performance-Enhancing Drugs and Your Teen Athlete,” Jan. 5, 2007, available at [<http://www.mayoclinic.com/health/performance-enhancing-drugs/SM00045>].

³⁹ R. Craig Kammerer, “Drug Testing in Sport and Exercise,” in *Performance-Enhancing Substances in Sport and Exercise*, p. 328.

⁴⁰ World Anti-Doping Agency, *The 2005 Prohibited List International Standard*, n.d., p. 7, available at [http://www.wada-ama.org/rtecontent/document/list_2005.pdf].

⁴¹ National Center on Addiction and Substance Abuse at Columbia University, *Winning at Any Cost: Doping in Olympic Sports*, Sept. 2000 (New York: Columbia University), pp. 24-25; U.S. Anti-Doping Agency, *2005 Guide to Prohibited Substances and Prohibited Methods of Doping*, p. 49.

⁴² U.S. Anti-Doping Agency, *2005 Guide to Prohibited Substances and Prohibited Methods of Doping*, p. 10.

⁴³ *Ibid.*, p. 29.

⁴⁴ Australian Sports Drug Agency, “Substances: Glucocorticosteroids (Cortisone),” n.d., available at [<http://www.asada.gov.au/substances/facts/glucocorticosteroids.htm>].

⁴⁵ Information provided electronically by the U.S. Anti-Doping Agency to the author on Apr. 1, 2005.

⁴⁶ U.S. National Library of Medicine and National Institutes of Health, Medline Plus, “Drug Information: Chorionic Gonadotropin (Systemic),” Jan. 21, 2004, available from the author.

increase the ability of their body to produce testosterone and to prevent atrophy of the testicles that results from taking large doses of anabolic steroids.”⁴⁷

Human growth hormone (hGH) — HGH is “the hormone ... responsible for growth and can increase protein synthesis when administered to an adult whose growth has stopped.”⁴⁸ Athletes might use it to “induce anabolic effects, reduce muscle cell breakdown and reduce body fat.”⁴⁹

Insulin — Insulin is used by individuals who have diabetes to manage their blood sugar levels. Some athletes may use insulin in an effort “to increase muscle growth and improve muscle definition.”⁵⁰

Masking agents — “Substances that are used to prevent the detection of other substances or methods used by an athlete in doping. An example would be the attempt to change the pH of the urine to enhance excretion of a doping substance.”⁵¹

Mimetics — Synthetic compounds “that produce the same (or a very similar effect) as another (especially a naturally occurring) compound.”⁵²

Pharmacological, chemical, and physical manipulation — “Pharmacological, chemical and physical manipulation is the *Use* of substances and methods, including masking agents, which alter, attempt to alter or may reasonably be expected to alter the integrity and validity of specimens collected in doping controls. These include but are not limited to catheterization, urine substitution and/or tampering, inhibition of renal excretion and alterations of testosterone and epitestosterone concentrations.”⁵³ Manipulation may include “the addition of chemicals or other contaminants to the actual specimen following collection, with the intent of preventing the detection of a doping substance....”⁵⁴ (This is an illustrative description. The actual substances and methods considered to constitute manipulation may vary from organization (or professional sports league) to organization.)

⁴⁷ Cynthia Kuhn, Scott Swartzwelder, and Wilkie Wilson, *Pumped* (New York: W.W. Norton and Co., 2000), p. 83.

⁴⁸ U.S. Anti-Doping Agency, *2007 Guide to Prohibited Substances and Prohibited Methods of Doping*, p. 18.

⁴⁹ Australian Sports Drug Agency, “Substances: Human Growth Hormone (hGH),” n.d., available at [<http://www.asada.gov.au/substances/facts/human.htm>].

⁵⁰ Australian Sports Drug Agency, “Substances: Insulin,” available at [<http://www.asada.gov.au/substances/facts/insulin.htm>].

⁵¹ U.S. Anti-Doping Agency, *2007 Guide to Prohibited Substances and Prohibited Methods of Doping*, p. 24.

⁵² *Oxford English Dictionary Online*, available at [<http://dictionary.oed.com>].

⁵³ U.S. Anti-Doping Agency, *2004 United States Anti-Doping Agency Guide to Prohibited Substances and Prohibited Methods of Doping*, 2003, p. 19. (Italics in original.)

⁵⁴ U.S. Anti-Doping Agency, *2005 Guide to Prohibited Substances and Prohibited Methods of Doping*, 2004, p. 26.

Precursor — “Steroid precursors are substances that are converted in the body into steroids....”⁵⁵

Prohormone — “A natural precursor of a hormone;⁵⁶ any substance that can be converted into a hormone.”⁵⁷

Steroids — “A class of compounds with common elements of their chemical structures, but wide ranging effects. *Androgenic-anabolic steroids* are the hormones responsible for secondary male sex characteristics; *estrogens* are the hormones responsible for development and maintenance of female secondary sex characteristics; *glucocorticosteroids* regulate carbohydrate, fat and protein metabolism; *mineralocorticoids* regulate the balance of water and electrolytes. In addition, steroids have been used for a variety of medical purposes, including reducing inflammation.”⁵⁸ Also see “anabolic androgenic steroids.”

Stimulants — “Stimulants are substances that act directly on the central nervous system to speed up parts of the brain and body.”⁵⁹ Stimulants “can reduce fatigue, suppress appetite, and increase alertness and aggressiveness.”⁶⁰

Testosterone — “Testosterone is the main male hormone that maintains muscle mass and strength....”⁶¹

⁵⁵ U.S. Olympic Committee, “USA Luge Joins Coalition Formed to Support Dietary Supplement Regulation,” press release, Apr. 24, 2003, available online at [http://www.usolympicteam.com/73_8410.htm].

⁵⁶ *Oxford English Dictionary Online*, available at [<http://dictionary.oed.com>].

⁵⁷ *Dorland’s Illustrated Medical Dictionary*.

⁵⁸ Information provided electronically by the U.S. Anti-Doping Agency to the author on Apr. 8, 2005. (Italics in original.)

⁵⁹ Australian Sports Drug Agency, “Substances: Stimulants,” n.d., available at [<http://www.asada.gov.au/substances/facts/stimulants.htm>].

⁶⁰ Mayo Clinic, “Taking Performance-Enhancing Drugs: Are You Risking Your Health?,” Dec. 26, 2006, available at [<http://www.mayoclinic.com/health/performance-enhancingdrugs/HQ01105>].

⁶¹ Mayo Clinic, “Testosterone Therapy: The Answer for Aging Men?” Apr. 14, 2006, available at [<http://www.mayoclinic.com/invoke.cfm?id=MC00030>].