

Harding University High School Lesson Plan

Teacher: Prior Subject: Health

ATOD: Day 1

ESSENTIAL STANDARD/OBJECTIVE:

9.ATOD.1.1~ Explain the short-term & long term effects of performance-enhancing drugs on health & eligibility to participate in sports

BENCHMARK:

9ATOD.1.1 Examine 4 professional athletes evaluating the long and short term effects of steroids on their health and sports eligibility.

WARM UP:

- * Steroids quiz to obtain prior knowledge. After students have completed quiz allow them to switch papers with their elbow partner and check for accuracy.

ESSENTIAL QUESTIONS:

What are the long and short term effects of steroids on my health and sports eligibility?
Is there a situation where you can justify using performance enhancing drugs? Support your answer.

21ST CENTURY SKILL(S):

Children must also take an active role in accessing and appropriately using information which affects their health.

GLOBAL CONNECTIONS:

Tour deFrance and steroids...
ABC video clip

REAL-WORLD CONNECTIONS:

Barry Bonds
Mark McGuire
Lance Armstrong
Marian Jones
Florence Griffin-Jorner

MATERIALS NEEDED:

Journals, videos,
graphic organizer,
tape, Choosing the
Best book, water bottle

TECHNOLOGY:

PowerPoint, video clips

LITERACY INCORPORATED:

Journal writing, article review, foldables (graphic organizer)

Introduction of New Material:

Today you will learn the long and short term health risks associated with the use of performance enhancing drugs like steroids. We will examine 4-6 professional athletes and analyze how steroid use affected their health as well as their sports careers.

Modeling:

- Power point
- Video

Guided Practice:

Teaching Steps:

- Warm up review
- Vocabulary: performance-enhancing, eligibility, steroid
- Power point presentation
- Article review (Various Articles)
 1. Use Steroids Fact Sheet as model for the class
 2. Copy and paste the text from the article on <http://www.wordle.net/create>
 3. This will a word scramble that you can put up on the board or print
 4. Walk the students through analyzing the wordle and go over the article
 5. Assign different parts of the article to different groups of students
 6. As students read the article, have the scribe of the group write down questions their portion of the article raises
 7. Allow them to research and discuss their portion of the article with their group then bring all students back together to discuss as a class
 8. Allow groups to ask their questions to the class. Some maybe answered by other groups and some may go unanswered and left open to discussion or further research to the answer (you may want to offer extra credit for those students who take the innovative to research the answer and report back to the class)

Independent Practice:

- Argumentative Essay: Journal writing
- Graphic Organizer:
 1. Begin with a plain sheet of 11" X 17" paper
 2. Fold the short sides of the sheet of paper into the middle to form a shutterfold
 3. Fold the shutterfold in half
 4. Unfold. Cut along the inside fold lines on both sides to form four tabs. Label as follows:
 Top Left Corner-Short Term Effects of Steroids
 Top Right Corner- Long Term Effects of Steroids
 Bottom Left Corner- Types of Performance Enhancing Drugs
 Bottom Right Corner-History of Steroids In Sports
- 5. Hand out The Brain's Response to Steroids and other related articles attached to students who are in groups of 4-5
- 6. Have the student groups will use the handouts to fill in their foldable
- 7. On the back of the foldable have students document information about their professional athlete including their name, sport they play, and summarize their athlete's story including how steroids affected them physically, what happened to them, where are they now, how their using steroids affected their sport, and what questions they would ask them if they could talk with them today
- 8. Review student foldables by having one group share their responses to one section with the class. Remind students that this could be used when studying for their assessment on ATOD

How will student learning be assessed?

Assessment Criteria:

Student work demonstrates accurate information about:

Long and short term effects of performance enhancing drugs such as steroids as well as analyzes how performance enhancing drugs affected various professional athletes.

Student work demonstrates proficiency by showing the ability to:

Organize information into categories, read an article and pull facts from the article to help make decisions, and discuss and rationalize information learned through reading article

Differentiation:

This lesson touches on a variety of learning styles with the use of power point presentations, individual work, group work, and class discussions.

Summary/Closure/Homework:

1. Today we learned about the dangers of anabolic steroids and how they cannot only cause physical damage to our bodies but they can also affect others.
2. Argumentative Essay: Based on what you researched in class today, take a stand on whether you think athletes should be allowed to use steroids. Support your answer with facts, explaining why you are arguing your side of the question.
3. Extra credit opportunity for those students who research and answer questions from the class discussion about steroids.

Reflection:

Results of Reflection:

Amy Prior-Harding University High School

Name: _____ Date: _____ Block: _____

Guided Notes ATOD Lesson 1

Directions: Using the information from the power point, complete the guided notes for Lesson 1.

1. _____ - artificial versions of a hormone that's in all of us- testosterone. Testosterone causes muscles to grow
2. _____ - substances used by people to improve their performance in the sports in which they engage.
3. _____ - qualified to participate or be chosen
4. _____ - drugs that mimic the effects of _____ and _____ in the body.
5. _____ - a _____ **hormone** that stimulates _____, _____ reproduction and regeneration in humans and other animals.
6. List four celebrities/athletes that have been accused or admitted to using steroids:
 - a. _____
 - b. _____
 - c. _____
 - d. _____
7. Lance Armstrong:
 - a. Who is he? _____
 - b. What are the accusations against him? _____
c. Based off the **FACTS** in this video, do you think he is innocent or guilty of using steroids?
Justify your answer with **FACTS**.

8. Marion Jones:
 - a. What is Marion Jones famous for?

 - b. How did steroids positively and/or negatively affect her career?

 - c. If you could ask her one question today, what would you ask?

Amy Prior-Harding University High School

9. Barry Bonds-

- a. Looking at the side-by-side pictures of Barry Bonds, describe the main differences between them.

- b. After watching the video, what is your opinion on Barry's behavior outside the court room?

- c. Do you feel justice was served in this case or do you feel he got away with his charges of steroid use? Why or why not?

10. Dwayne "The Rock" Johnson-

- a. Looking at the picture of The Rock, how would you describe him to a friend if you saw him outside of school?

- b. After watching the video, do you think steroids are being used on a regular basis by members of the WWE? Give two reasons for your answer.

- c. Do you think the WWE should be held accountable for the professional wrestlers that work for them? Why or why not?

11. _____ can be caused by steroid abuse.

12. Because of how steroids act on the limbic system in the _____, _____, including _____, can occur.

13. Taking "_____ " can cause _____ to pop up (body acne)

14. Females who take steroids can become more _____. Their voices can _____.

15. A condition called _____ can be caused by steroid use. This condition can lead to a _____ or _____.

16. When the body's hormone balance is disrupted by taking steroids, males can develop _____, a condition called _____.

17. Increased levels of hormones signal bones to _____ growing.

18. What does SQ3R stand for?

a. S-_____

b. Q-_____

c. 3R-_____

NIDA INFOFACTS[®]

www.drugabuse.gov

National Institute on Drug Abuse • National Institutes of Health • U.S. Department of Health & Human Services

Steroids (Anabolic-Androgenic)

Anabolic-androgenic steroids (AAS) are synthetically produced variants of the naturally occurring male sex hormone testosterone. “Anabolic” refers to muscle-building, and “androgenic” refers to increased male sexual characteristics. “Steroids” refers to the class of drugs. These drugs can be legally prescribed to treat conditions resulting from steroid hormone deficiency, such as delayed puberty, as well as diseases that result in loss of lean muscle mass, such as cancer and AIDS.

How Are AAS Abused?

Some people, both athletes and non-athletes, abuse AAS in an attempt to enhance performance and/or improve physical appearance. AAS are taken orally or injected, typically in cycles rather than continuously. “Cycling” refers to a pattern of use in which steroids are taken for periods of weeks or months, after which use is stopped for a period of time and then restarted. In addition, users often combine several different types of steroids in an attempt to maximize their effectiveness, a practice referred to as “stacking.”

How Do AAS Affect the Brain?

The immediate effects of AAS in the brain are mediated by their binding to androgen (male sex hormone)

and estrogen (female sex hormone) receptors on the surface of a cell. This AAS–receptor complex can then shuttle into the cell nucleus to influence patterns of gene expression. Because of this, the acute effects of AAS in the brain are substantially different from those of other drugs of abuse. The most important difference is that AAS are not euphorogenic, meaning they do not trigger rapid increases in the neurotransmitter dopamine, which is responsible for the “high” that often drives substance abuse behaviors.

However, long-term use of AAS can eventually have an impact on some of the same brain pathways and chemicals—such as dopamine, serotonin, and opioid systems—that are affected by other drugs of abuse. Considering the combined effect of their complex direct and indirect actions, it is not surprising that AAS can affect mood and behavior in significant ways.

AAS and Mental Health

Preclinical, clinical, and anecdotal reports suggest that steroids may contribute to psychiatric dysfunction. Research shows that abuse of anabolic steroids may lead to aggression and other adverse effects.¹ For example, although many users report feeling good about themselves while on anabolic steroids, extreme mood swings can also occur, including manic-like symptoms that could lead to violence.²

Researchers have also observed that users may suffer from paranoid jealousy, extreme irritability, delusions, and impaired judgment stemming from feelings of invincibility.

Addictive Potential

Animal studies have shown that AAS are reinforcing—that is, animals will self-administer AAS when given the opportunity, just as they do with other addictive drugs.^{3,4} This property is more difficult to demonstrate in humans, but the potential for AAS abusers to become addicted is consistent with their continued abuse despite physical problems and negative effects on social relations.⁵ Also, steroid abusers typically spend large amounts of time and money obtaining the drug: this is another indication of addiction. Individuals who abuse steroids can experience withdrawal symptoms when they stop taking AAS—these include mood swings, fatigue, restlessness, loss of appetite, insomnia, reduced sex drive, and steroid cravings, all of which may contribute to continued abuse. One of the most dangerous withdrawal symptoms is depression—when persistent, it can sometimes lead to suicide attempts.

Research also indicates that some users might turn to other drugs to alleviate some of the negative effects of AAS. For example, a study of 227 men admitted in 1999 to a private treatment center for dependence on heroin or other opioids found that 9.3 percent had abused AAS before trying any other illicit drug. Of these, 86

percent first used opioids to counteract insomnia and irritability resulting from the steroids.⁶

What Other Adverse Effects Do AAS Have on Health?

Steroid abuse can lead to serious, even irreversible health problems. Some of the most dangerous among these include liver damage; jaundice (yellowish pigmentation of skin, tissues, and body fluids); fluid retention; high blood pressure; increases in LDL ("bad" cholesterol); and decreases in HDL ("good" cholesterol). Other reported effects include renal failure, severe acne, and trembling. In addition, there are some gender- and age-specific adverse effects:

- For *men*—shrinking of the testicles, reduced sperm count, infertility, baldness, development of breasts, increased risk for prostate cancer
- For *women*—growth of facial hair, male-pattern baldness, changes in or cessation of the menstrual cycle, enlargement of the clitoris, deepened voice
- For *adolescents*—stunted growth due to premature skeletal maturation and accelerated puberty changes; risk of not reaching expected height if AAS is taken before the typical adolescent growth spurt

In addition, people who inject AAS run the added risk of contracting or transmitting HIV/AIDS or hepatitis, which causes serious damage to the liver.

What Treatment Options Exist?

There has been very little research on treatment for AAS abuse. Current knowledge derives largely from the experiences of a small number of physicians who have worked with patients undergoing steroid withdrawal. They have learned that, in general, supportive therapy combined with education about possible withdrawal symptoms is sufficient in some cases. Sometimes, medications can be used to restore the balance of the hormonal system after its disruption by steroid abuse. If symptoms are severe or prolonged, symptomatic medications or hospitalization may be needed.

How Widespread Is AAS Abuse?

Monitoring the Future Survey[†]

Monitoring the Future is an annual survey used to assess drug use among the Nation's 8th-, 10th-, and 12th-grade students. While steroid use remained stable among all grades from 2007 to 2008, there has been a significant reduction since 2001 for

nearly all prevalence periods (i.e., lifetime,^{††} past-year, and past-month use) among all grades surveyed. The exception was past-month use among 12th-graders, which has remained stable. Males consistently report higher rates of use than females: for example, in 2008, 2.5 percent of 12th-grade males, versus 0.6 percent of 12th-grade females, reported past-year use.

**Anabolic Steroid Use by Students
2008 Monitoring the Future Survey**

	8th Grade	10th Grade	12th Grade
Lifetime ^{††}	1.4%	1.4%	2.2%
Past Year	0.9%	0.9%	1.5%
Past Month	0.5%	0.5%	1.0%

Other Information Sources

For a list of street terms used to refer to steroids and other drugs, visit www.whitehousedrugpolicy.gov/streetterms/default.asp.

For additional information on the effects of anabolic-androgenic steroids and information on healthy alternatives, please visit NIDA's Web site on steroids, www.steroidabuse.org.

[†] These data are from the 2008 Monitoring the Future survey, funded by the National Institute on Drug Abuse, National Institutes of Health, Department of Health and Human Services, and conducted by the University of Michigan's Institute for Social Research. The survey has tracked 12th-graders' illicit drug use and related attitudes since 1975; in 1991, 8th- and 10th-graders were added to the study. The latest data are online at www.drugabuse.gov.

^{††} "Lifetime" refers to use at least once during a respondent's lifetime. "Past year" refers to use at least once during the year preceding an individual's response to the survey. "Past month" refers to use at least once during the 30 days preceding an individual's response to the survey.

References

- ¹ Pope HG Jr, Kouri EM, Hudson JI. Effects of supraphysiologic doses of testosterone on mood and aggression in normal men: A randomized controlled trial. *Arch Gen Psychiatry* 57(2):133–140, 2000.
- ² Pope HG Jr, Katz DL. Affective and psychotic symptoms associated with anabolic steroid use. *Am J Psychiatry* 145(4):487–490, 1988.
- ³ Arnedo MT, Salvador A, Martinez-Sanchis S, Gonzalez-Bono E. Rewarding properties of testosterone in intact male mice: A pilot study. *Pharmacol Biochem Behav* 65:327–332, 2000.
- ⁴ DiMeo AN, Wood RI. Self-administration of estrogen and dihydrotestosterone in male hamsters. *Horm Behav* 49(4):519–526, 2006.
- ⁵ Brower KJ. Anabolic steroid abuse and dependence. *Curr Psychiatry Rep* 4(5):377–387, 2002.
- ⁶ Arvary D, Pope HG Jr. Anabolic-androgenic steroids as a gateway to opioid dependence. *N Engl J Med* 342:1532, 2000.



National Institutes of Health – U.S. Department of Health and Human Services

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Anabolic Steroids

And Other Performance Enhancing Drugs

Warm Up

<http://www.youtube.com/watch?v=2LgiY1nfhKM>

- ESSENTIAL STANDARD/OBJECTIVE:9.ATOD.1.1- Explain the short-term & long term effects of performance-enhancing drugs on health & eligibility to participate in sports
- BENCHMARK:9ATOD.1.1 Examine 4 professional athletes evaluating the long and short term effects of steroids on their health and sports eligibility.
- ESSENTIAL QUESTIONS: What are the long and short term effects of steroids on my health and sports eligibility? Is there a situation where you can justify using performance enhancing drugs? Support your answer.
- Assignment- Answer the 7 question steroid quiz you received on your way into class today. Remain quiet in your seats- do not talk while other are working.

• What are anabolic steroids?

Artificial versions of a hormone that's in all of us-testosterone. Testosterone causes muscles to grow.

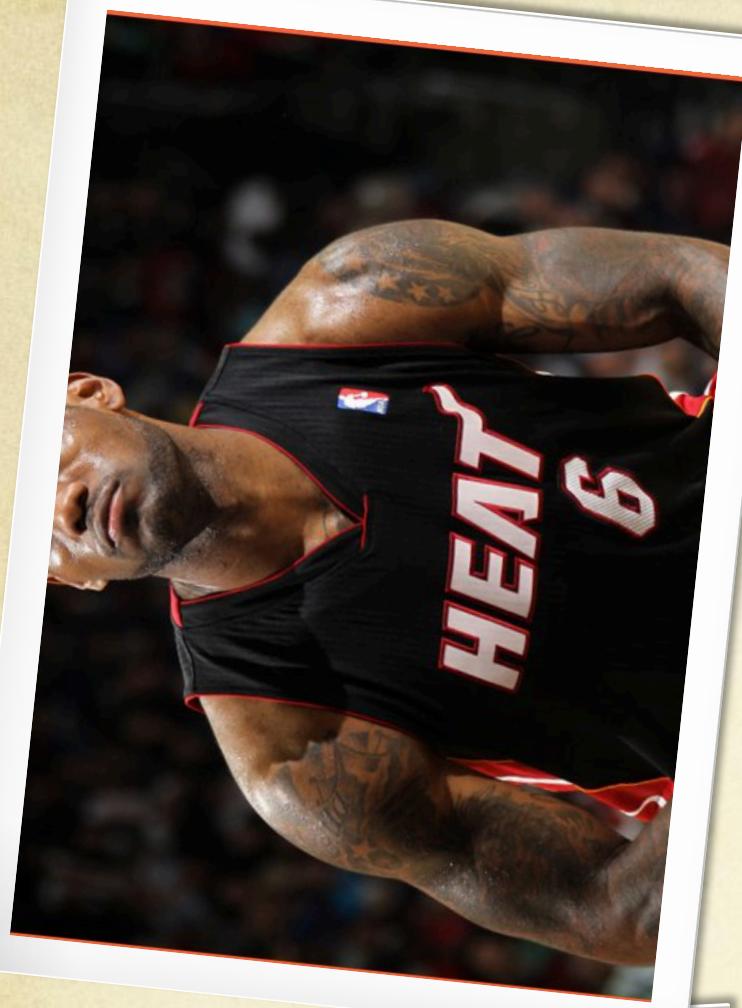


Other Key Terms

- Performance Enhancing Drugs-substances used by people to improve their performance in the sports in which they engage.
- Eligibility-qualified to participate or be chosen
- Anabolic-drugs that mimic the effects of testosterone and dihydrotestosterone in the body.
- Human Growth Hormone (HGH)- a peptide hormone that stimulates growth, cell reproduction and regeneration in humans and other animals.

Whose using?

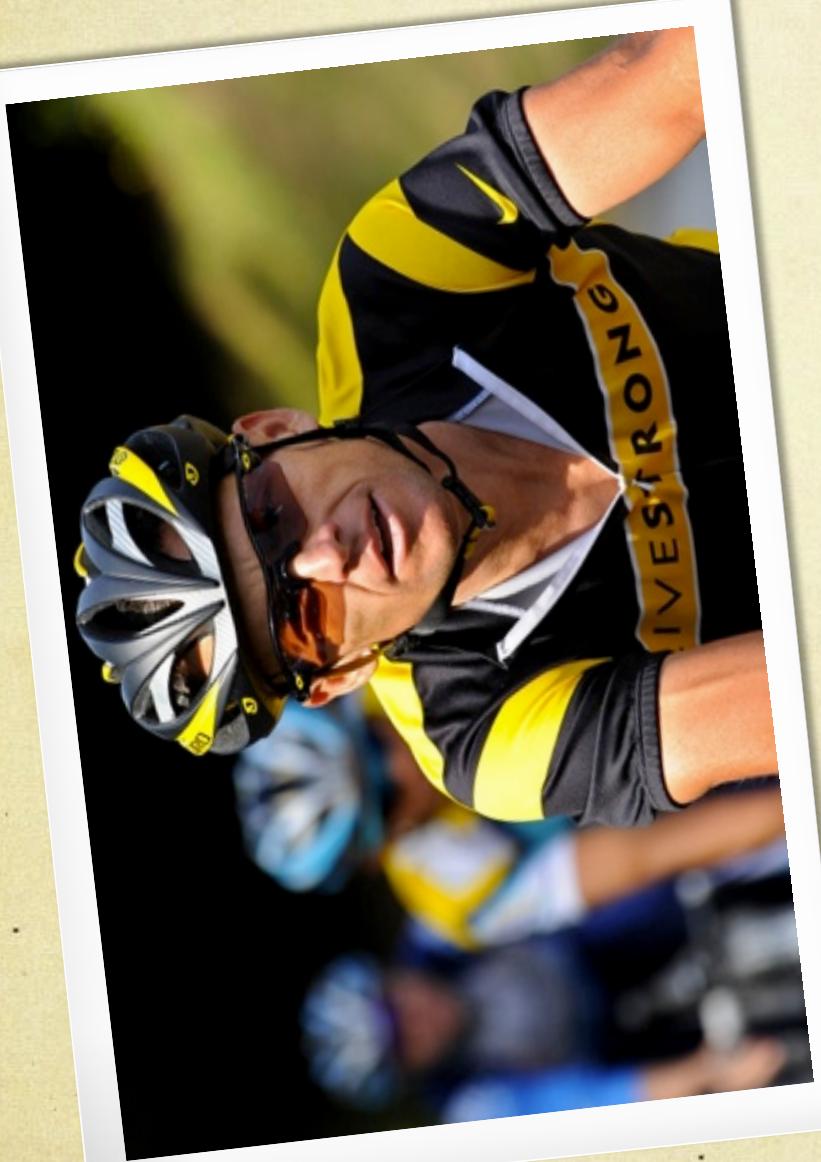
Arnold Swartzenegger, Sylvester Stallone, Alex Rodriguez, Marion Jones, Tiger Woods, Carrot Top, Curtis Jackson (“50 Cent”), Hulk Hogan, Barry Bonds, John Cena, LeBron James, & Dwayne “The Rock” Johnson



The accusations

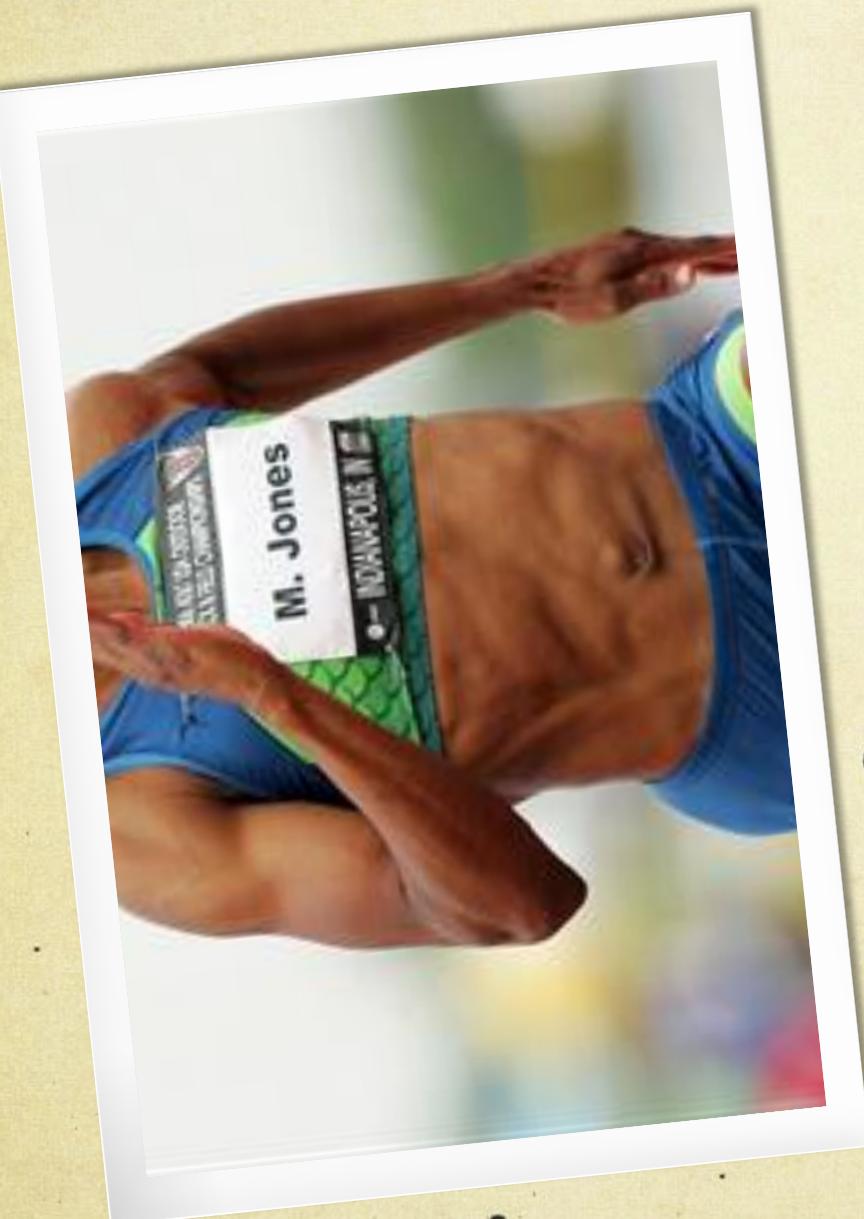
Lance Armstrong

<http://abcnews.go.com/GMA/video/lance-armstrong-fights-doping-claims-10708503>



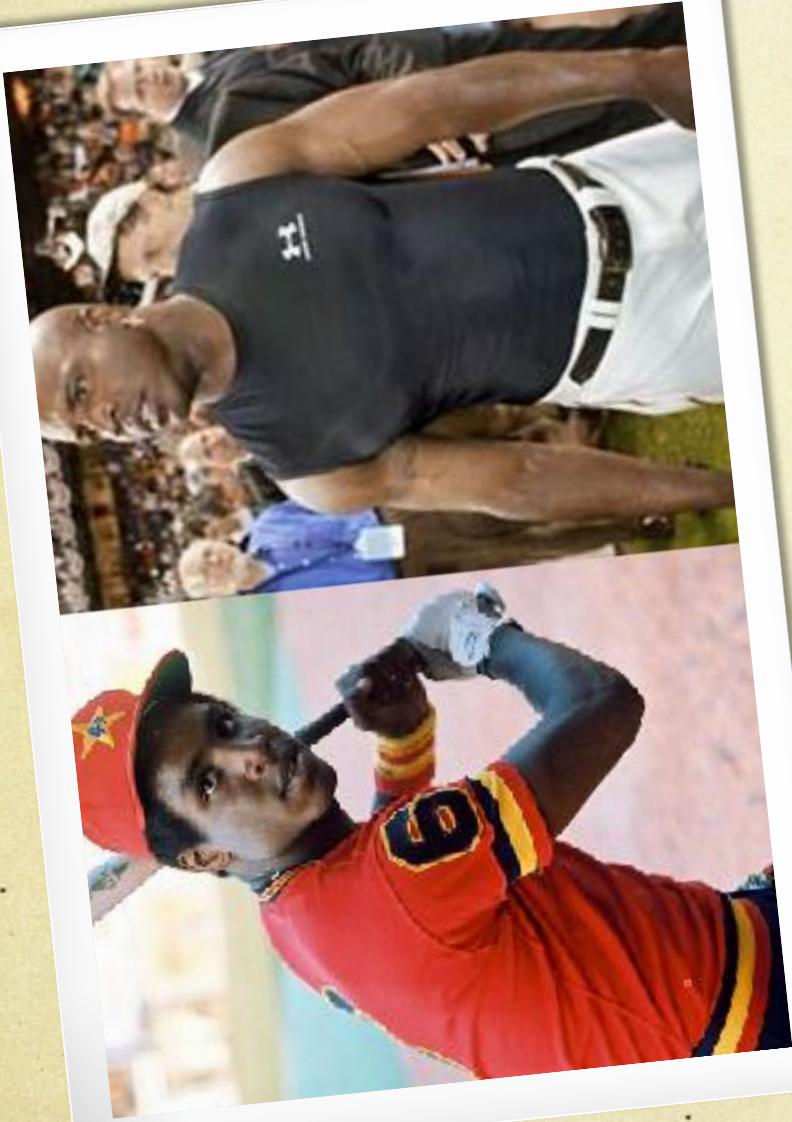
Marion Jones

[http://abcnews.go.com/GMA/Books/video/
marion-jones-on-the-right-track-11971243](http://abcnews.go.com/GMA/Books/video/marion-jones-on-the-right-track-11971243)



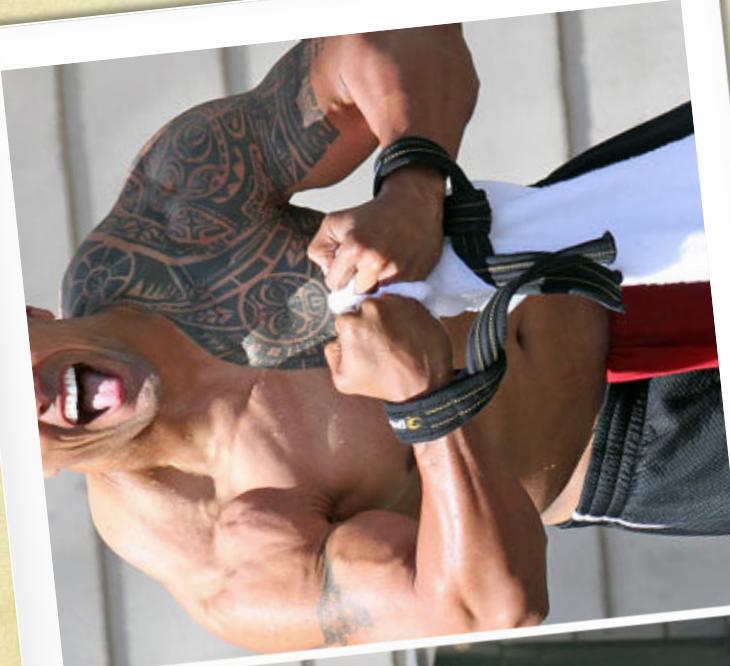
Barry Bonds

<http://abcnews.go.com/GMA/video/barry-bonds-verdict-guilty-13372464>



Dwayne “The Rock” Johnson

WTNH - Chris Nowinski on Linda McMahon's Knowledge of Steroid Use At WWE - YouTube



Side Effects of Steroids

- BALDNESS can be caused by steroid abuse.
- Because of how steroids act on the limbic system in the brain, MOOD SWINGS, including homicidal rage, can occur.
- Taking “roids” can cause PIMPLES to pop up (body acne)
- Females who take steroids can become more MASCULINE. Their voices can deepen.

Side Effects Continued...

- A condition called **ATHEROSCLEROSIS** can be caused by steroid use. This condition can lead to a **HEART ATTACK** or **STROKE**.
- When the body's hormone balance is disrupted by taking steroids, males can develop **BREAST**, a condition called **GYNECOMASTIA**.
- Increased levels of hormones signal bones to **STOP** growing.

NIDA Steroids

- Article Review-SQ3R
- S- survey (preview material)
- Q- questions (clues as to what kinds of information you should be looking for)
- 3R- read, recite, & review

Created by Amy Prior-Harding University High School

Team Assignment...

- Use the information provided to your group to analyze the facts about anabolic steroids and their effects on your body.
- Your group has also received an article about a professional athlete who has used or is accused of using performance enhancing drugs.
- Read your articles being sure to write down any questions the article raises. You may also use provided highlighters when you find key information about your athlete and/or performance enhancing drugs.
- Once you have completed the above mentioned please send one team representative to collect your materials for the next part of your assignment.

Foldable-

a graphic organizer to record your notes and resources about anabolic steroids

- Take your large sheet of paper you received from your team member and fold the short sides of the paper into the middle to form a shutterfold. (hamburger style)
- Fold the shutterfold in half
- Unfold and cut along the inside fold lines on both sides to form four tabs. (only cut top paper NOT both so they look like flaps you would open up)
- Label the outside as follows:
Top Left- Short Term Effects
Top Right- Long Term Effects
Bottom Left- Types of Performance Enhancing Drugs
Bottom Right- History of Steroids in Sports

Foldable Continued...

- On the back of your Foldable include the following information...
 - Name of your athlete at the top (like a title)
 - The sport your athlete plays or played
 - Summarize your athlete's story including how steroids affected them physically, what happened to them because of their use, where are they now, how their using steroids affected their sport, and what questions you would ask them if you could talk with them today.

Ticket Out The Door

- Take out a sheet of notebook paper. You will be writing an argumentative paper about steroids.
- Argumentative Essay: Based on what you researched in class today, take a stand on whether you think athletes should be allowed to use steroids. Support your answer with facts, explaining why you are arguing your side of the question.
- This is due on your way out the door. Should you not **completely** finish your essay, it is homework.

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May 23, 2011

No Breakaway From Doping Charges

By **GEORGE VECSEY**

Until Sunday night, on "60 Minutes," **Lance Armstrong** and Tyler Hamilton had been linked mostly by a moment of crisis — perhaps even a great gesture of sportsmanship — in the Pyrenees eight years ago, when Hamilton just might have saved Armstrong's fifth consecutive **Tour de France** championship.

It's all there on the Zapruder tape: Armstrong's bicycle is ensnared by a plastic bag held by a witless spectator; Armstrong goes down; **Jan Ullrich** of Germany and other leaders appear to be pedaling onward; every second counts; but Hamilton — an American, a former teammate of Armstrong's — seems to catch up with them as a visible reminder of Tour etiquette, that riders should never profit from such a mishap; they slow to wait for Armstrong to recover.

"Hard to say," Armstrong said Monday. "It can be interpreted a lot of different ways."

Armstrong added in a telephone conversation that he has heard **different versions** of that spill and the aftermath, involving Ullrich, who was **barred from the Tour** in 2007 for suspicions of doping, or with Hamilton, who has been barred since losing his 2004 Olympic title for testing positive for blood doping.

Now retired, Armstrong, 39, is not likely to be schmoozing about the old days, not since **Hamilton publicly accused him** on "60 Minutes" of systematically cheating to win his seven consecutive Tours from 1999 through 2005.

According to Hamilton, Armstrong provided illegal drugs to teammates; showed them how to use them; used secret cellphones and code words like Edgar Allan Poe for EPO, the blood-boosting drug; flew Hamilton to Spain for illegal doping; and paid his way out of a positive test.

These charges, made by a rider from the core of the sport, come exactly one year after charges by the disgraced Floyd Landis that Armstrong presided over the drugging of a

generation of the best team cycling has ever seen. I wrote then that it would be hard for Armstrong to stage a breakaway from Landis's charges. Not much has changed as Hamilton made his charges to Scott Pelley, soon to be the anchor on CBS News.

Hamilton looked haunted and twitchy on "60 Minutes," worse than he did in 2003 while riding the Tour with his broken collarbone held together by tape. But his charges sounded much like what Landis said about Armstrong.

"I stand by our statement of last week with regard to what they call the facts of the show," Armstrong said when he returned a call Monday. His lawyers and spokesmen have issued rebuttals, and Armstrong did not want to get into specifics.

"More importantly, I'm not going to let this distract me," he said. "I'm just not. I have a lot of stuff going on, a lot of positive stuff." His foundation fights cancer, which almost killed him, and he does not need to spell out that he is an icon to a lot of people who want to believe the best of him. "I have an incredible organization that is not going to be derailed by news from last century," he said.

Those ancient times do not go away. A grand jury in California is looking into possible fraud and perjury while Armstrong was representing the United States Postal Service. He has often said that the U.S.P.S. made money from him, and has no problem with him. He calls himself the most tested athlete in history, which could be true.

There are some allegedly positive EPO tests from 1999 that appear to match his name and number, but which have no legal standing. And he set off some bells in a laboratory after testing positive for steroids, but that was quickly annulled by a postdated prescription for saddle sores, which was a surprise to his masseuse, who said she would have known. And on Sunday, Hamilton accused Armstrong of having a positive test in a Swiss tuneup race quashed by writing a check to the International Cycling Union, which on Monday denied there was any cover-up in return for a \$25,000 donation and a later \$100,000 gift for a testing machine.

As for the allegations of a plane ride to Spain for blood doping before the Tour?

"I can't deny that we would have traveled to races and training camps and team functions together," Armstrong said, including the use of jets. He stuck by the general denial of the charges and emphasized the passage of time.

The grand jury could indict Armstrong, or it could drop the investigation, and people will

think what they want. The evidence — technical and anecdotal — of the last decade suggests that the whole sport has been dirty for a generation, if not always.

The dangers and skills are a visceral part of the sport as the riders speed through Europe. One rider was killed in Italy this month. Yet Tour etiquette, the camaraderie among racers, is part of the mix. People are still debating whether an injured Hamilton saved Armstrong's title in 2003.

"A lot of people said he was not waiting and a lot of people, probably more, said he was," Armstrong said about his old rival Ullrich. "When you can see the images, Tyler went up and said, 'Hey, slow down, stop,' but there were other people there who said: 'Hey, what are you talking about, he's not trying to ride away. He's waiting.' It's a coin toss."

It has become something of a coin toss whether one lone ranger could remain squeaky clean while leaving dirty riders in his wake. Isn't that what innocent-until-proven-guilty laws and due process are there to protect?

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JONES PLEADS GUILTY, ADMITS LYING ABOUT STEROIDS

Olympic track star says she took banned drugs from 2000 to 2001

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Jones: 'I have betrayed your trust'

Oct. 5: An emotional Marion Jones says, "I have let my country down," after pleading guilty to lying to federal investigators when she denied using performance-enhancing drugs.

AP Associated Press

updated 5:40 p.m. ET Oct. 5, 2007

WHITE PLAINS, N.Y. - Marion Jones' voice never wavered, her reserve never faltered as the words rang out in the silent, stately federal courtroom.

She was a liar and a cheat, she told the judge, her eyes never straying from his face.

And so ended years of angry denials by one of the world's most celebrated athletes.

The owner of three Olympic golds and two bronze medals, Jones came clean Friday and admitted she used steroids. She pleaded guilty to lying to federal investigators when she denied using performance-enhancing drugs, then announced her retirement in a tearful apology outside the U.S. District Court.

"It's with a great amount of shame that I stand before you and tell you that I have betrayed your trust," Jones said, her voice cracking as her mother stood behind her, a strong and supportive hand on her shoulder.

"I have been dishonest and you have the right to be angry with me. I have let (my family)



SLIDE SHOW



The Week in Sports Pictures

Pats and Giants feel Super, Kareem receives a tall honor, fans remember Joe Paterno, and more.

SLIDESHOW



Who's hot on Twitter?

Check out which of your favorite athletes have the best pages and most followers!

SPECIAL FEATURE



When athletes and celebs get together

A look at the many links between sports and Hollywood stars.

SLIDESHOW



Presidential candidates and sports

How do President Obama and his Republican rivals

down. I have let my country down, and I have let myself down," she said, pausing frequently to regain her composure. "I recognize that by saying I'm deeply sorry, it might not be enough and sufficient to address the pain and hurt that I've caused you.

"Therefore, I want to ask for your forgiveness for my actions, and I hope you can find it in your heart to forgive me."

The calm strength she'd displayed in the courtroom was gone, washed away by a flood of tears. She embraced her mother, who told her daughter, "Good job." The two then climbed into a black limousine with one of Jones' attorneys and drove away, not taking any questions.

NBC VIDEO



Sports' fallen heroes

Oct. 5: What is it about competition that fuels the temptation to cheat? NBC's Ann Thompson reports.

Jones was released on her own recognizance and was due back in court Jan. 11 for sentencing.

"It's bittersweet," said Travis Tygart, chief executive officer of the U.S. Anti-Doping Agency. "Any time a potential American hero admits to cheating us sports fans, people who watch Olympic games, it's bittersweet."

Indeed, Friday marked a stunning fall from grace for the 31-year-old Jones, once the symbol for everything that was right about women in sports. She was powerful, captivating the country with the audacious goal of winning an unprecedented five gold medals at the Sydney Olympics. But she was beautiful and feminine, too, gracing the cover of Vogue with the poise of a supermodel.

Though she fell short in Sydney — only three of her five medals were gold, the other two bronze — her winsome smile and charming personality made her a star. Seven years later, she is broke, her reputation is ruined and she is looking at prison time.

Jones also pleaded guilty to a second count of lying to investigators about her association with a check-fraud scheme.

"You're vindicated, but it doesn't make you feel any happier this is going on," said Dick Pound, chairman of the World Anti-Doping Agency. "The fact that she was using the performance-enhancing drugs is not a surprise. People suspected strongly or knew, but couldn't prove the use."

MARION JONES COMES CLEAN

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[Jones admits lying to feds in check-fraud scam](#)
[Her statement | Reactions | Your thoughts?](#)
[Key figures in BALCO steroids scandal](#)

"When something seems too good to be true, it probably is."

Jones is the biggest name to be brought down so far in the Bay Area Laboratory Co-Operative scandal. But home run king Barry Bonds also has been linked to BALCO, and a grand jury is still investigating whether he lied to federal investigators.

Bonds denied ever knowingly taking performance-enhancing drugs. In testimony before a grand jury in 2003, Bonds said he believed a clear substance and a cream given to him by his trainer were flaxseed oil and an arthritis balm.

"The federal government will vigorously prosecute individuals who provide false statements to its agents," said Scott N. Schools, the U.S. Attorney for the Northern District of California.

stack up when it comes to their sports backgrounds?

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Suspicious and doping allegations had dogged Jones for years. Her ex-husband, C.J. Hunter, was busted for doping, and Tim Montgomery, the father of her son Monty, was stripped of his world record in the 100 meters in connection with the BALCO case.

Jones herself was one of the athletes who testified before a grand jury in 2003 in the BALCO investigation. In August 2006, one of her urine samples tested positive for EPO, but she was cleared when a backup sample tested negative.



The Week in Sports Pictures

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CONTINUED : "I have never used performance-enhancing drugs"

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WHEN ATHLETES AND CELEBRITIES COME TOGETHER

From Joe DiMaggio and Marilyn Monroe to Tony Romo and Jessica Simpson, athletes and celebrities have been linked together. Take a look at some of the more well-known "couples".

The Washington Post

Marion Jones Admits to Steroid Use

Advertisement



By Amy Shipley
Washington Post Staff Writer
Friday, October 5, 2007

Track star Marion Jones has acknowledged using steroids as she prepared for the 2000 Summer Games in Sydney and is scheduled to plead guilty today in New York to two counts of lying to federal agents about her drug use and an unrelated financial matter, according to a letter Jones sent to close family and friends.

Jones, who won five medals at the Sydney Olympics, said she took the steroid known as "the clear" for two years beginning in 1999, according to the letter. A source familiar with Jones's legal situation who requested anonymity confirmed the relevant facts that were described in the letter.

"I want to apologize to you all for all of this," Jones said. "I am sorry for disappointing you all in so many ways."

Jones's admissions could cost her the three gold and two bronze medals she won in Sydney while enlarging the cloud of doubt hovering over Olympic and professional sports, which have been tarred in recent years with accusations of performance-enhancing drug use, steroids busts and positive drug tests by prominent athletes.

In December 2004, the International Olympic Committee opened an investigation into allegations surrounding steroid use by Jones, once considered the greatest female athlete in the world. In the past, Jones has vehemently denied using steroids or any performance-enhancing drugs.

"This is a shame," World Anti-Doping Agency Chairman Dick Pound said in a telephone interview yesterday. "This was America's darling at the 2000 Summer Olympics. . . . I hope this will have a deterrent effect. It's not merely cheating in sports, but now she has lied her way to exposure to penal sanctions."

In the letter, Jones, who will turn 32 next Friday, said her former coach, Trevor Graham, gave her the substance, telling her it was the nutritional supplement flaxseed oil and that she should take it by putting two drops under her tongue. Graham, contacted by telephone yesterday, declined to comment.

Jones said she "trusted [Graham] and never thought for one second" she was using a performance-enhancing drug until after she left Graham's Raleigh, N.C.-based training camp at the end of 2002. "Red flags should have been raised in my head when he told me not to tell anyone about" the supplement program, she said. She also said she noticed changes in how her body felt and how she was able to recover from workouts after she stopped taking the substance in 2001.

The clear, also known as THG, or tetrahydrogestrinone, is a powerful anabolic steroid that was at the center of the federal investigation into the Bay Area Laboratory Co-operative, or Balco. More than a dozen track and field athletes have faced punishments for their use of the clear, which drug-testing authorities were unable to detect until Graham sent a sample of it to the U.S. Anti-Doping Agency in 2003.

Baseball players Gary Sheffield and Jason Giambi admitted during grand jury testimony to using the clear, according to reports in the San Francisco Chronicle. Outfielder Barry Bonds also admitted using a substance that he said he had been told was flaxseed oil by his personal trainer, the Chronicle reported.

The federal probe surrounding Balco, a nutritional supplements company based in Burlingame, Calif., has resulted in five criminal convictions. Jones, however, would be the first athlete, joining Balco founder Victor Conte Jr. and vice president James Valente; Bonds's personal trainer, Greg Anderson; track coach Remi Korchemny; and chemist Patrick Arnold, who designed the clear.

Jones's coach, Graham, was indicted last November on three counts of lying to federal agents connected to the investigation. He has pleaded not guilty and his trial is scheduled for November.

Jones, who recently married former sprinter Obadele Thompson, said in her letter that she planned to fly from her home in Austin and meet her mother in New York, where she was scheduled to enter the plea today in U.S. District Court. She said she faced up to six months in jail and would be sentenced in three months. Federal sentencing guidelines call for a maximum of five years in prison for one count of lying to federal agents.

Reached at their Austin home, Thompson declined comment on the letter, portions of which were read to him, saying: "The process has to go through before you can make any comments. . . . I'm sure at the appropriate time, all necessary comments will be made." He did not dispute the contents of the letter. He said Jones was unavailable to comment.

When questioned in 2003 by federal agents investigating Balco, Jones lied about using the clear even though agents presented her with a sample of the substance and she immediately recognized it as what she had taken at Graham's behest, Jones said in the letter. She said she lied because she panicked and wanted to protect herself and her coach.

Jones also said in the letter that she lied about a \$25,000 check given to her by track athlete Tim Montgomery, the father of her young son who pleaded guilty in New York this year for his part in a multimillion-dollar bank fraud and money-laundering scheme.

Jones said she told investigators she knew nothing about the deposit, even though Montgomery told her it was from the 2005 sale of a refurbished vehicle and was partial payment for \$50,000 she had loaned him.

"Once again, I panicked," she wrote. "I did not want my name associated with this mess. I wanted to stay as far away from it as possible."

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August 01, 2011

To Hall With These Guys?

What happens in two years when Barry Bonds and Sammy Sosa are HOF eligible? And what will it mean for the game?

Joe Posnanski



This was a nice Hall of Fame weekend. Curveball guru Bert Blyleven was finally inducted after 13 years of hand-wringing by the voters. And Roberto Alomar, one of the finer second basemen to play the game, got his day. Next year's inductions should be a nice one too. Wonderful shortstop Barry Larkin will probably get elected. Perhaps stars like Jeff Bagwell, Larry Walker or Tim Raines will get their due. But I'm already looking ahead two years. That, to me, is when we're going to find out just what the Baseball Hall of Fame means after the eras of gaudy numbers and in this new age of skepticism. There will be six fascinating first-time players on the 2013 ballot, and there's no telling how the voters will respond to any of them. They are:

- **Barry Bonds**, who hit more homers than anyone else and who was the central figure in the BALCO scandal.
- **Roger Clemens**, who won 354 games and seven Cy Young Awards, and who was indicted for perjury after telling Congress that he did not use steroids. (A mistrial was ruled in the case on July 14.)
- **Sammy Sosa**, the only player to hit 60-plus homers in three different seasons and who, according to *The New York Times*, tested positive for performance enhancing drugs in 2003.
- **Mike Piazza**, perhaps the best-hitting catcher ever, who was accused of steroid use by anonymous sources in Jeff Pearlman's *The Rocket That Fell To Earth*.
- **Curt Schilling**, an outspoken critic of steroids who once won a playoff game while bleeding through his sock, but who has only 216 regular-season victories.
- **Craig Biggio**, who won four Gold Gloves as a second baseman and had 3,060 hits, but who took 20 seasons to reach that mark.

There's never been a class like this. For all of the arguments that the Baseball Hall of Fame has sparked, there's always been a certainty about the place. Baseball really invented the whole idea of the Hall of Famer, and that notion became a part of the game. Everyone understood that when you were watching Tony Gwynn or George Brett or Tom Seaver play, you were watching Hall of Famers. When Mariano Rivera comes out of the bullpen to close a game, parents can say to their children, "That guy will someday be in the Hall of Fame."

But things are cloudy these days. Bonds and Clemens are two of the best ever to play the game. If not for the steroid noise that surrounds them, you could make a viable argument that they are simply the two best ever.

Right now, however, the wind seems to be blowing against them. Nobody knows how we will look back on the steroid hysteria. It's possible—even probable—that opinions will soften over time. But there's no sign of that happening anytime soon. Yes, it's hard to imagine a Hall of Fame without Bonds or Clemens. But unless the wind shifts, I'd say they won't make it in 2013. There are just too many people who cannot imagine a Hall of Fame *with* them.

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Mar 12 2009 3:30 PM EDT 13,247

Dwayne Johnson Admits To College Steroid Use

'We have to institute stronger penalties,' says actor formerly known as The Rock.

By Eric Ditzian (@ericditzian)

Steroids have become a fact of life in the sports world, but rarely do those in the movie business have an intimate, first-person perspective on the dangers and allure of performance-enhancing drugs. But then, how many movie stars went from college football to professional wrestling to box office hits like "The Game Plan" and "Get Smart"?

When Dwayne Johnson talked with MTV News — in a cab — about latest Disney movie, "Race to Witch Mountain" (due out March 13), he ended up sharing not only his thoughts on 'roids, but also his personal experience using them.

"I tried it," Johnson admitted. "Me and my buddies tried it back in the day when I was 18 or 19. Didn't know what we were doing."

That was around the time that Johnson was a defensive lineman for the University of Miami Hurricanes, where he was part of the 1991 National Championship team. After a short stint in the Canadian Football League, Johnson gave pro wrestling a go, and eventually became one of World Wrestling Entertainment's biggest stars. The WWE has experienced numerous steroid scandals, from the suspension of 10 wrestlers for drug-policy violations in 2007 to the suspected steroid-related deaths of stars Eddie Guerrero and Chris Benoit.

"It's not as prevalent today in our sports as it was 10 years ago," Johnson said. "But we have to recognize that a culture was created where it was OK to do that, and a lot of team managers, owners, players who didn't do it would turn the other cheek. We recognize that, and now we have to institute stronger penalties, which we are doing."

Stiff punishments and increased media attention aside, Johnson lamented that steroid use was so attractive for so many years to such a wide range of athletes, from the Yankees' Alex Rodriguez to female stars such as Olympian Marion Jones. "A-Rod is an example of a lot of guys — and women, for that matter — of that era in all athletics," Johnson said.

With his days as "The Rock" behind him and an ever-increasing presence in mainstream moviedom, Johnson emphasized the importance of teaching children about the various perils of performance-enhancing drugs. "I also believe in education," he said. "It's a bad example that you set for kids, and at the same time it's a good example for kids to follow, not in terms of the use, but in terms of the repercussions of what can happen because there is no replacement for hard work."

Research Report

SERIES

Persistent reports of anabolic steroid abuse by professional athletes, many of whom are regarded as role models by young people, highlight the fact that we are now facing a very damaging message in our society—that bigger is better; and being the best is more important than how you get there.

Abuse of anabolic steroids differs from the abuse of other illicit substances because the initial abuse of anabolic steroids is not driven by the immediate euphoria that accompanies most drugs of abuse, such as cocaine, heroin, and marijuana, but by the desire of abusers to change their appearance and performance, characteristics of great importance to adolescents. The effects of steroids can boost confidence and strength, leading abusers to overlook the potential serious and long-term damage that these substances can cause.

While anabolic steroids can enhance certain types of performance or appearance, they are dangerous drugs, and when used inappropriately they can cause a host of severe, long-lasting, and in some cases, irreversible negative health consequences. Anabolic steroids can lead to early heart attacks, strokes, liver tumors, kidney failure, and serious psychiatric problems. In addition, because steroids are often injected, users who share needles or use non-sterile techniques when they inject steroids are at risk for contracting dangerous infections, such as HIV/AIDS and hepatitis B and C.

I hope that students, parents, teachers, coaches, and others will take advantage of the information about anabolic steroids found on the NIDA Web site (www.steroid-abuse.gov) and join us in our prevention and education efforts. Participating in sports offers many benefits, but young people and adults should not take unnecessary health risks in an effort to win.

Nora D. Volkow, M.D.

Director

National Institute on Drug Abuse

ANABOLIC STEROID ABUSE

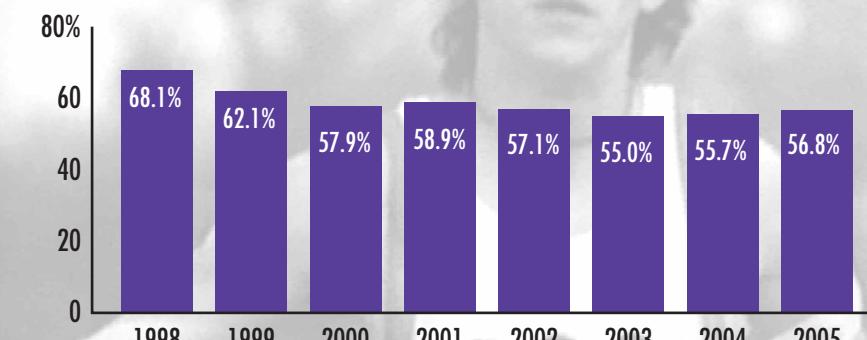
What are anabolic steroids?

Anabolic steroids" is the familiar name for synthetic substances related to the male sex hormones (e.g., testosterone). They promote the growth of skeletal muscle (anabolic effects) and the development of male sexual characteristics (androgenic effects) in both males and females. The term "anabolic steroids" will be used throughout this report because of its familiarity, although the proper term for these compounds is "anabolic-androgenic steroids."

Anabolic steroids were developed in the late 1930s primarily to treat hypogonadism, a condition in which the testes do not produce sufficient testosterone for normal growth, development, and sexual functioning. The primary medical uses of these compounds are to treat delayed puberty, some types of impotence, and wasting of the body caused by HIV infection or other diseases.

During the 1930s, scientists discovered that anabolic steroids could facilitate the growth of skeletal muscle in laboratory animals, which led to abuse of

12th-Graders' Perceived Harmfulness of Steroid Use



Source: 2005 Monitoring the Future Survey.

the compounds first by body-builders and weightlifters and then by athletes in other sports. Steroid abuse has become so widespread in athletics that it can affect the outcome of sports contests.

Illicit steroids are often sold at gyms, competitions, and through mail order operations after being smuggled into this country. Most illegal steroids in the United States are smuggled from countries that do not require a prescription for the purchase of steroids. Steroids are also illegally diverted from U.S. pharmacies or synthesized in clandestine laboratories.

What are steroidal supplements?

In the United States, supplements such as tetrahydrogestrinone (THG) and androstenedione (street name "Andro") previously could be purchased legally without a prescription through many commercial sources, including health food stores. Steroidal supplements can be converted into testosterone or a similar compound in the body. Less is known about the side effects of steroidal supplements, but if large quantities of these compounds substantially increase testosterone levels in the body, then they also are likely to produce the same side effects as anabolic steroids themselves. The purchase of these supplements, with the notable exception of dehydroepiandrosterone (DHEA), became illegal after the passage in 2004 of amendments to the Controlled Substances Act.

What is the scope of steroid use in the United States?

The 2005 Monitoring the Future study, a NIDA-funded survey of drug use among adolescents in middle and high schools across the United States, reported that past year use of steroids decreased significantly among 8th- and 10th-graders since peak use in 2000. Among 12th-graders, there was a different trend—from 2000 to 2004, past year steroid use increased, but in 2005 there was a significant decrease, from 2.5 percent to 1.5 percent.

Steroid abuse affects individuals of various ages. However, it is difficult to estimate the true prevalence of steroid abuse in the United States because many data sources that measure drug abuse do not include steroids. Scientific evidence indicates that anabolic steroid abuse among athletes may range between one and six percent.

Why do people abuse anabolic steroids?

One of the main reasons people give for abusing steroids is to improve their athletic performance. Among athletes, steroid abuse has been estimated to be less than 6 percent according to surveys, but anecdotal information suggests more widespread abuse. Although testing procedures are now in place to deter steroid abuse among professional and Olympic athletes, new designer drugs constantly become available that can escape detection and put athletes willing to cheat one step ahead of testing efforts. This dynamic, however, may be about to shift if the saving of urine and blood samples for retesting at a future date becomes the standard. The high probability of eventual detection of the newer designer steroids, once the technology becomes

Commonly Abused Steroids

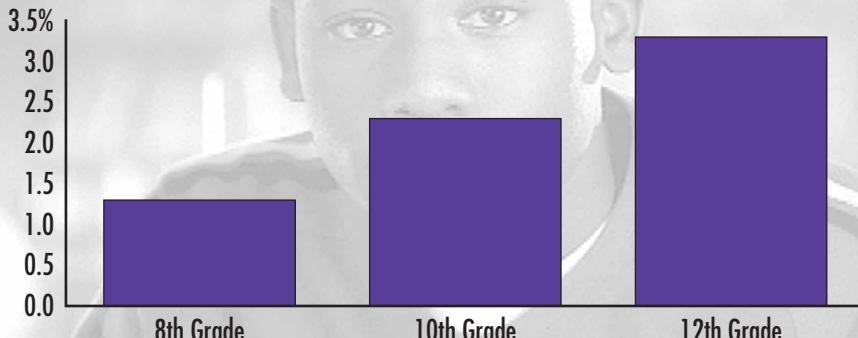
Oral Steroids

- Anadrol (oxymetholone)
- Oxandrin (oxandrolone)
- Dianabol (methandrostenolone)
- Winstrol (stanozolol)

Injectable Steroids

- Deca-Durabolin (nandrolone decanoate)
- Durabolin (nandrolone phenpropionate)
- Depo-Testosterone (testosterone cypionate)
- Equipoise (boldenone undecylenate)
- Tetrahydrogestrinone (THG)

Annual Prevalence of Steroid Use Among Males Grades 8, 10, 12



Source: 2005 Monitoring the Future Survey.

available, plus the fear of retroactive sanctions, should give athletes pause.

Another reason people give for taking steroids is to increase their muscle size or to reduce their body fat. This group includes people suffering from the behavioral syndrome called muscle dysmorphia, which causes them to have a distorted image of their bodies. Men with muscle dysmorphia think that they look small and weak, even if they are large and muscular. Similarly, women with this condition think that they look fat and flabby, even though they are actually lean and muscular.

Some people who abuse steroids to boost muscle size have experienced physical or sexual abuse. In one series of interviews with male weight-lifters, 25 percent who abused steroids reported memories of childhood physical or sexual abuse. Similarly, female weight-lifters who had been raped were found to be twice as likely to report use of anabolic steroids or another purported muscle-building drug, compared with those who had not been raped. Moreover, almost all of those

who had been raped reported that they markedly increased their bodybuilding activities after the attack. They believed that being bigger and stronger would discourage further attacks because men would find them either intimidating or unattractive.

Finally, some adolescents abuse steroids as part of a pattern of high-risk behaviors. These adolescents also take risks such as drinking and driving, carrying a gun, driving a motorcycle without a helmet, and abusing other illicit drugs. Conditions such as muscle dysmorphia, a history of physical or sexual abuse, or a history of engaging in high-risk behaviors have all been associated with an increased risk of initiating or continuing steroid abuse.

How are anabolic steroids abused?

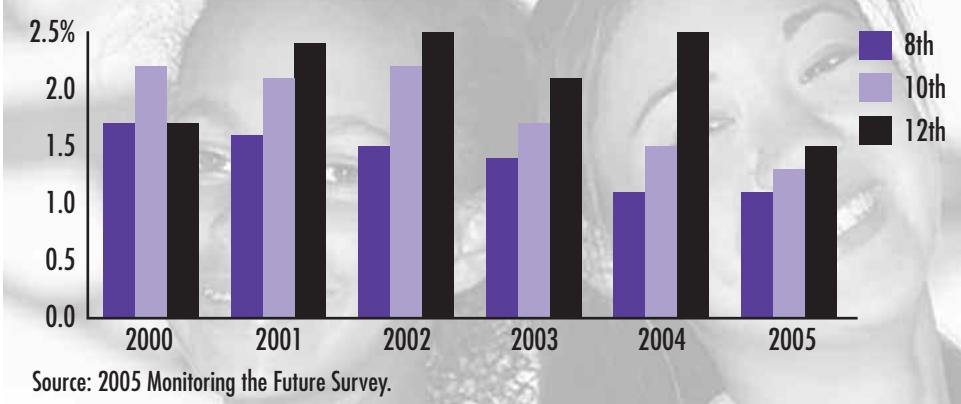
Some anabolic steroids are taken orally, others are injected intramuscularly, and still others are provided in gels or creams that are applied to the skin. Doses taken by abusers can be 10 to 100 times higher than the doses used for medical conditions.

Cycling, stacking, and pyramiding

Steroids are often abused in patterns called “cycling,” which involve taking multiple doses of steroids over a specific period of time, stopping for a period, and starting again. Users also frequently combine several different types of steroids in a process known as “stacking.” Steroid abusers typically “stack” the drugs, meaning that they take two or more different anabolic steroids, mixing oral and/or injectable types, and sometimes even including compounds that are designed for veterinary use. Abusers think that the different steroids interact to produce an effect on muscle size that is greater than the effects of each drug individually, a theory that has not been tested scientifically.

Another mode of steroid abuse is referred to as “pyramiding.” This is a process in which users slowly escalate steroid abuse (increasing the number of steroids or the dose and frequency of one or more steroids used at one time), reaching a peak amount at mid-cycle and gradually tapering the dose toward the end of the cycle. Often, steroid abusers pyramid their doses in cycles of 6 to 12 weeks. At the beginning of a cycle, the person starts with low doses of the drugs being stacked and then slowly increases the doses. In the second half of the cycle, the doses are slowly decreased to zero. This is sometimes followed by a second cycle in which the person continues to train but without drugs. Abusers believe that pyramiding allows the body time to adjust to the high doses,

Annual Prevalence of Use of Steroids 8th-Graders, 10th-Graders, and 12th-Graders



and the drug-free cycle allows the body's hormonal system time to recuperate. As with stacking, the perceived benefits of pyramiding and cycling have not been substantiated scientifically.

What are the health consequences of steroid abuse?

Anabolic steroid abuse has been associated with a wide range of adverse side effects ranging from some that are physically unattractive, such as acne and breast development in men, to others that are life threatening, such as heart attacks and liver cancer. Most are reversible if the abuser stops taking the drugs, but some are permanent, such as voice deepening in females.

Most data on the long-term effects of anabolic steroids in humans come from case reports rather than formal epidemiological studies. From the case reports, the incidence of life-threatening effects appears to be low, but serious adverse effects

may be underrecognized or underreported, especially since they may occur many years later. Data from animal studies seem to support this possibility. One study found that exposing male mice for one-fifth of their life-span to steroid doses comparable to those taken by human athletes caused a high frequency of early deaths.

Hormonal system

Steroid abuse disrupts the normal production of hormones in the body, causing both reversible and irreversible changes. Changes that can be reversed include reduced sperm production and shrinking of the testicles (testicular atrophy). Irreversible changes include male-pattern baldness and breast development (gynecomastia) in men. In one study of male bodybuilders, more than half had testicular atrophy and/or gynecomastia.

In the female body, anabolic steroids cause masculinization. Breast size and body fat decrease, the skin becomes coarse, the clitoris enlarges, and the voice deepens. Women may experience excessive growth of body hair

but lose scalp hair. With continued administration of steroids, some of these effects become irreversible.

Musculoskeletal system

Rising levels of testosterone and other sex hormones normally trigger the growth spurt that occurs during puberty and adolescence and provide the signals to stop growth as well. When a child or adolescent takes anabolic steroids, the resulting artificially high sex hormone levels can prematurely signal the bones to stop growing.

Cardiovascular system

Steroid abuse has been associated with cardiovascular diseases (CVD), including heart attacks and strokes, even in athletes younger than 30. Steroids contribute to the development of CVD, partly by changing the levels of lipoproteins that carry cholesterol in the blood. Steroids, particularly oral steroids, increase the level of low-density lipoprotein (LDL) and decrease the level of high-density lipoprotein (HDL). High LDL and low HDL levels increase the risk of atherosclerosis, a condition in which fatty substances are deposited inside arteries and disrupt blood flow. If blood is prevented from reaching the heart, the result can be a heart attack. If blood is prevented from reaching the brain, the result can be a stroke.

Steroids also increase the risk that blood clots will form in blood vessels, potentially disrupting blood flow and damaging the heart muscle so that it does not pump blood effectively.

Liver

Steroid abuse has been associated with liver tumors and a rare condition called peliosis hepatitis, in which blood-filled cysts form in the liver. Both the tumors and the cysts can rupture, causing internal bleeding.

Skin

Steroid abuse can cause acne, cysts, and oily hair and skin.

Infections

Many abusers who inject anabolic steroids may use nonsterile injection techniques or share contaminated needles with other abusers. In addition, some steroid preparations are manufactured illegally under nonsterile conditions. These factors put abusers at risk for acquiring life-threatening viral infections, such as HIV and hepatitis B and C. Abusers also can develop endocarditis, a bacterial infection that causes a potentially fatal inflammation of the inner lining of the heart. Bacterial infections also can cause pain and abscess formation at injection sites.

What effects do anabolic steroids have on behavior?

Case reports and small studies indicate that anabolic steroids, when used in high doses, increase irritability and aggression. Some steroid abusers report that they have committed aggressive acts, such as physical fighting or armed robbery, theft, vandalism, or burglary. Abusers who have committed aggressive

acts or property crimes generally report that they engage in these behaviors more often when they take steroids than when they are drug free. A recent study suggests that the mood and behavioral effects seen during anabolic-androgenic steroid abuse may result from secondary hormonal changes.

Scientists have attempted to test the association between anabolic steroids and aggression by administering high steroid doses or placebo for days or weeks to human volunteers and then asking the people to report on their behavioral symptoms. To date, four such studies have been conducted. In three, high steroid doses did produce greater feelings of irritability and aggression than did placebo, although the effects appear to be highly variable across individuals. In one study, the drugs did not have that effect. One possible explanation, according to the researchers, is that some but not all anabolic steroids increase irritability and aggression. Recent animal studies show an increase in aggression after steroid administration.

In a few controlled studies, aggression or adverse, overt behaviors resulting from the administration of anabolic steroid use have been reported by a minority of volunteers.

In summary, the extent to which steroid abuse contributes to violence and behavioral disorders is unknown. As with the health complications of steroid abuse, the prevalence of extreme cases of violence and behavioral

Possible Health Consequences of Anabolic Steroid Abuse

Hormonal system

- men
 - infertility
 - breast development
 - shrinking of the testicles
 - male-pattern baldness
- women
 - enlargement of the clitoris
 - excessive growth of body hair
 - male-pattern baldness

Musculoskeletal system

- short stature (if taken by adolescents)
- tendon rupture

Cardiovascular system

- increases in LDL; decreases in HDL
- high blood pressure
- heart attacks
- enlargement of the heart's left ventricle

Liver

- cancer
- peliosis hepatitis
- tumors

Skin

- severe acne and cysts
- oily scalp
- jaundice
- fluid retention

Infection

- HIV/AIDS
- hepatitis

Psychiatric effects

- rage, aggression
- mania
- delusions

disorders seems to be low, but it may be underreported or underrecognized.

Research also indicates that some users might turn to other drugs to alleviate some of the negative effects of anabolic steroids. For example, a study of 227 men admitted in 1999 to a private treatment center for addiction to heroin or other opioids found that 9.3 percent had abused anabolic steroids before trying any other illicit drug. Of these 9.3 percent, 86 percent first used opioids to counteract insomnia and irritability resulting from anabolic steroids.

Are anabolic steroids addictive?

An undetermined percentage of steroid abusers may become addicted to the drugs, as evidenced by their continued abuse despite physical problems and negative effects on social relations. Also, steroid abusers typically spend large amounts of time and money obtaining the drugs, which is another indication that they may be addicted. Individuals who abuse steroids can experience withdrawal symptoms when they stop taking steroids, such as mood swings, fatigue, restlessness, loss of appetite, insomnia, reduced sex drive, and steroid cravings. The most dangerous of the withdrawal symptoms is depression, because it sometimes leads to suicide attempts. If left untreated, some depressive symptoms associated with

anabolic steroid withdrawal have been known to persist for a year or more after the abuser stops taking the drugs.

What can be done to prevent steroid abuse?

Most prevention efforts in the United States today focus on athletes involved with the Olympics and professional sports; few school districts test for abuse of illicit drugs. It has been estimated that close to 9 percent of secondary schools conduct some sort of drug testing program, presumably focused on athletes, and that less than 4 percent of the Nation's high schools test their athletes for steroids. Studies are currently under way to determine whether such testing reduces drug abuse.

Research on steroid educational programs has shown that simply teaching students about steroids' adverse effects does not convince adolescents that they can be adversely affected. Nor does such instruction discourage young people from taking steroids in the future. Presenting both the risks and benefits of anabolic steroid use is more effective in convincing adolescents about steroids' negative effects, apparently because the students find a balanced approach more credible, according to the researchers.

NIDA-funded prevention research helps reduce steroid abuse.

A more sophisticated approach has shown promise for preventing steroid abuse among players on high school sports teams. The Adolescents Training and Learning to Avoid Steroids (ATLAS) program is showing high school football players that they do not need steroids to build powerful muscles and improve athletic performance. By educating student athletes about the harmful effects of anabolic steroids and providing nutrition and weight-training alternatives to steroid use, the ATLAS program has increased football players' healthy behaviors and reduced their intentions to abuse steroids. In the program, coaches and team leaders teach the harmful effects of anabolic steroids and other illicit drugs on immediate sports performance, and discuss how to refuse offers of drugs.

Studies show that 1 year after completion of the program, compared with a control group, ATLAS-trained students in 15 high schools had:

- Half the incidence of new abuse of anabolic steroids and less intention to abuse them in the future;
- Less abuse of alcohol, marijuana, amphetamines, and narcotics;
- Less abuse of "athletic enhancing" supplements;

- Less likelihood of engaging in hazardous substance abuse behaviors such as drinking and driving;
- Increased protection against steroid and other substance abuse. Namely, less interest in trying steroids, less desire to abuse them, better knowledge of alternatives to steroid abuse, improved body image, and increased knowledge of diet supplements.

The Athletes Targeting Healthy Exercise and Nutrition Alternatives (ATHENA) program was patterned after the ATLAS program, but designed for adolescent girls on sports teams. Early testing of girls enrolled in the ATHENA program showed significant decreases in risky behaviors. While preseason risk behaviors were similar among controls and ATHENA participants, the control athletes were three times more likely to begin using diet pills and almost twice as likely to begin abuse of other body-shaping substances, including amphetamines, anabolic steroids, and muscle-building supplements during the sports season. The use of diet pills increased among control subjects, while use fell to approximately half of the preseason levels among ATHENA participants. In addition, ATHENA team members were less likely to be sexually active, more likely to wear seatbelts, less likely to ride in a car with a driver who had been drinking, and they experienced fewer injuries during the sports season.

Both Congress and the Substance Abuse and Mental

Health Services Administration have endorsed ATLAS and ATHENA as model prevention programs. These Oregon Health & Science University programs have been awarded the 2006 annual *Sports Illustrated* magazine's first-ever "Champion Award."

What treatments are effective for anabolic steroid abuse?

Few studies of treatments for anabolic steroid abuse have been conducted. Current knowledge is based largely on the experiences of a small number of physicians who have worked with patients undergoing steroid withdrawal. The physicians have found that supportive therapy is sufficient in some cases. Patients are educated about what they may experience during withdrawal and are evaluated for suicidal thoughts. If symptoms are severe or prolonged, medications or hospitalization may be needed.

Some medications that have been used for treating steroid withdrawal restore the hormonal system after its disruption by steroid abuse. Other medications target specific withdrawal symptoms—for example, antidepressants to treat depression and analgesics for headaches and muscle and joint pains.

Some patients require assistance beyond pharmacological treatment of withdrawal symptoms and are treated with behavioral therapies.

Where can I get further scientific information about steroid abuse?

To learn more about anabolic steroids and other drugs of abuse, contact the National Clearinghouse for Alcohol and Drug Information (NCADI) at 800-729-6686. Information specialists are available to help you locate information and resources.

Fact sheets, including *InfoFacts*, on the health effects of anabolic steroids, other drugs of abuse, and other drug topics are available on the NIDA Web site (www.drugabuse.gov), and can be ordered free of charge in English and Spanish from NCADI at www.health.org.

Access information on the Internet

- What's new on the NIDA Web site
- Information on drugs of abuse
- Publications and communications (including *NIDA NOTES*)
- Calendar of events
- Links to NIDA organizational units
- Funding information (including program announcements and deadlines)
- International activities
- Links to related Web sites (access to Web sites of many other organizations in the field)

NIDA Web Sites

- www.drugabuse.gov
- www.steroidabuse.gov
- www.clubdrugs.gov
- www.hiv.drugabuse.gov
- www.inhalant.drugabuse.gov

NCADI

Web Site: www.health.org
Phone No.: 800-729-6686

Glossary

Addiction: A chronic, relapsing disease, characterized by compulsive drug seeking and abuse and by long-lasting chemical changes in the brain.

Anabolic effects: Drug-induced growth or thickening of the body's nonreproductive tract tissues—including skeletal muscle, bones, the larynx, and vocal cords—and a decrease in body fat.

Analgesics: A group of medications that reduce pain.

Androgenic effects: A drug's effects upon the growth of the male reproductive tract and the development of male secondary sexual characteristics.

Antidepressants: A group of medications used in treating depressive disorders.

Cardiovascular system: The heart and blood vessels.

Hormone: A chemical substance formed in glands in the body and carried by the blood to organs and tissues, where it influences function, structure, and behavior.

Musculoskeletal system: The muscles, bones, tendons, and ligaments.

Placebo: An inactive substance (pill, liquid, etc.), which is administered to a comparison group, as if it were therapy, but which has no therapeutic value other than to serve as a negative control.

Sex hormones: Hormones that are found in higher quantities in one sex than in the other. Male sex hormones are the androgens, which include testosterone; and the female sex hormones are the estrogens and progesterone.

Withdrawal: Symptoms that occur after chronic use of an addictive drug is reduced or stopped.

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Quiz: Anabolic Steroids

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Instructions: After reviewing **Facts on Drugs: Anabolic Steroids** on the NIDA for Teens Web site (<http://teens.drugabuse.gov/>), take this short quiz to test your knowledge.

1. Steroids are synthetic versions of _____.
 - a) bacteria
 - b) testosterone
 - c) estrogen

2. Gynecomastia, a condition that can be caused by steroid abuse, is _____.
 - a) breast development in men
 - b) fat deposits in arteries
 - c) baldness

3. "Roid rage" refers to _____.
 - a) emotional changes brought on by steroid abuse
 - b) drivers on steroids
 - c) steroid-induced strength

4. Steroids _____.
 - a) stimulate muscle growth
 - b) cause eyesight to improve
 - c) increase intelligence

5. Steroid abusers have been known to take doses up to _____ times higher than what would be prescribed by a doctor.
 - a) 5
 - b) 500
 - c) 100

6. While males can develop breasts, female steroid abusers become more masculine. Among other things, their voice _____.
 - a) gets hoarse
 - b) deepens
 - c) gets higher

7. "Roid rage" is a result of _____.
 - a) painful clogged arteries
 - b) embarrassing acne
 - c) the drug acting on the limbic system

Answer Key: Anabolic Steroids Quiz

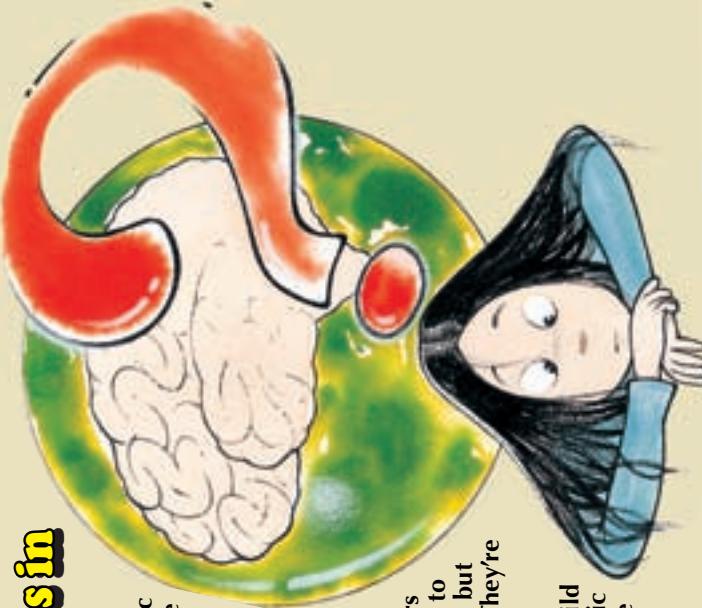
1. **B:** Steroids are synthetic versions of testosterone. Testosterone is a male sex hormone. Estrogen is the female sex hormone.
2. **A:** Gynecomastia, a condition that can be caused by steroid abuse, is breast development in men. This condition is caused by a disruption in the normal production of hormones. In guys, the disruption can also cause reduced sperm count and shrunken testicles. In females, it can cause voices to deepen, body hair to grow, and breast size to decrease. The term for fat deposits in arteries is atherosclerosis.
3. **A:** “Roid rage” refers to emotional changes brought on by steroid abuse. Steroids act on the limbic system, the part of the brain that deals with emotions and moods. Abuse can cause irritability and mild depression. It can also cause mania, delusions, and violent aggression.
4. **A:** Steroids stimulate muscle growth, so users look big and strong on the outside. But they may be creating weaknesses on the inside.
5. **C:** Steroid abusers have been known to take doses up to 100 times higher than what would be prescribed by a doctor. This just shows how desperate some people are to get big fast.
6. **B:** While males can develop breasts, female steroid abusers become more masculine. Among other things, their voice deepens. Females can also experience excessive growth of body hair and decreased breast size.
7. **C:** “Roid rage,” or the violent aggression brought on by steroids, is a result of the drug acting on the limbic system. The limbic system is the part of the brain that’s involved in emotions and moods. Other results of steroids acting on the limbic system are irritability, depression, euphoria, mania, and delusions.

Anabolic Steroids in Medicine

Doctors never prescribe anabolic steroids for building muscle in young, healthy people. (Try push-ups instead!) But doctors sometimes prescribe anabolic steroids to treat some types of anemia or disorders in men that prevent the normal production of testosterone.

You may have heard that doctors sometimes prescribe steroids to reduce swelling. This is true, but these aren't anabolic steroids. They're corticosteroids.

Since corticosteroids don't build muscles the way that anabolic steroids do, people don't abuse them.



STEROIDS

True or False or False

- 1) Anabolic steroids can affect the hypothalamus.
- 2) Anabolic steroids strengthen the immune system.
- 3) Anabolic steroids can cause males' breasts to grow and females' breasts to shrink.

The Search Continues

There's still a whole lot that scientists don't know about the effects of anabolic steroids on the brain. Maybe someday you'll make the next big discovery.



For more information, visit:
www.teens.drugabuse.gov

To learn more about anabolic steroids and other drugs of abuse, or to order materials on these topics, free of charge, in English or Spanish, visit the NIDA Web site at www.drugabuse.gov or contact the DrugPubs Research Dissemination Center at 877-NIDA-NIH (877-643-2644; TTY/TDD: 240-645-0228).

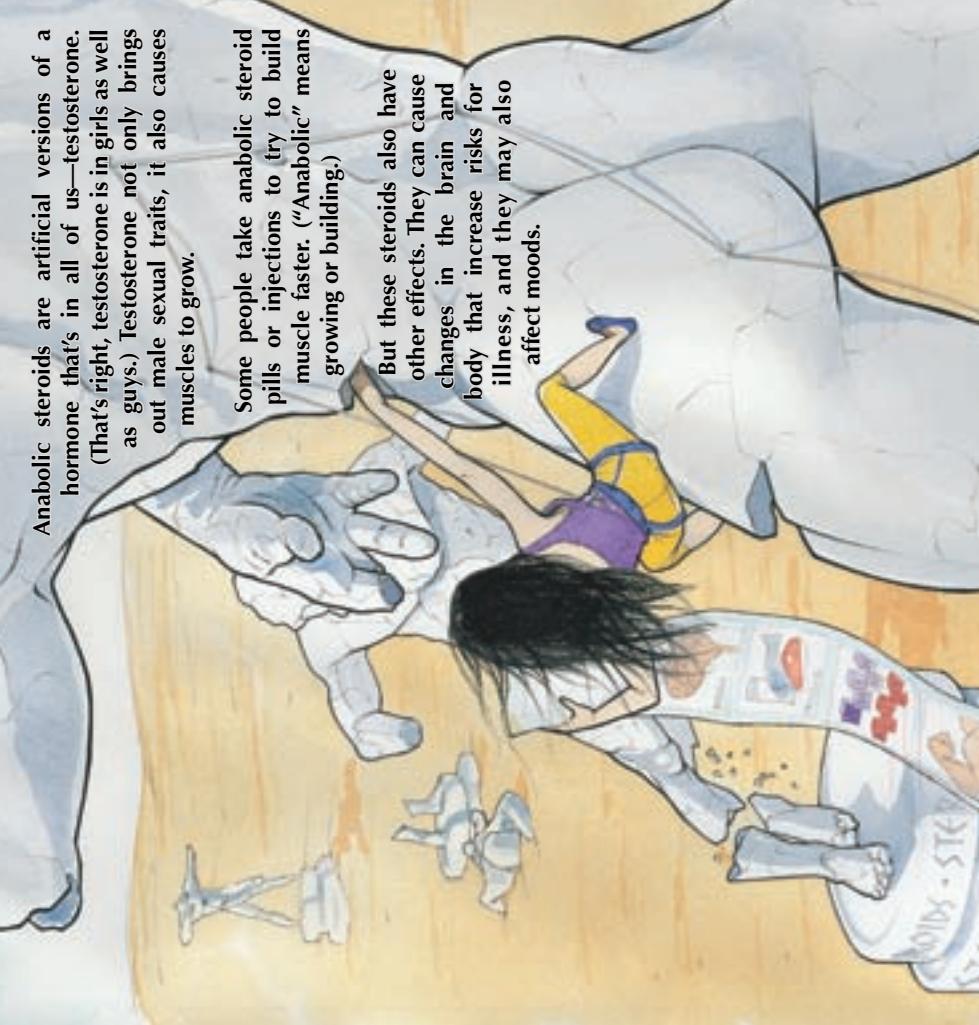
The Brain's Response to Anabolic Steroids

Hi, my name's Sara Bellum. Welcome to my magazine series exploring the brain's response to drugs. In this issue, we'll investigate the fascinating facts about anabolic steroids.

Anabolic steroids are artificial versions of a hormone that's in all of us—testosterone. (That's right, testosterone is in girls as well as guys.) Testosterone not only brings out male sexual traits, it also causes muscles to grow.

Some people take anabolic steroid pills or injections to try to build muscle faster. ("Anabolic" means growing or building.)

But these steroids also have other effects. They can cause changes in the brain and body that increase risks for illness, and they may also affect moods.



OUTSIDE INSIDE

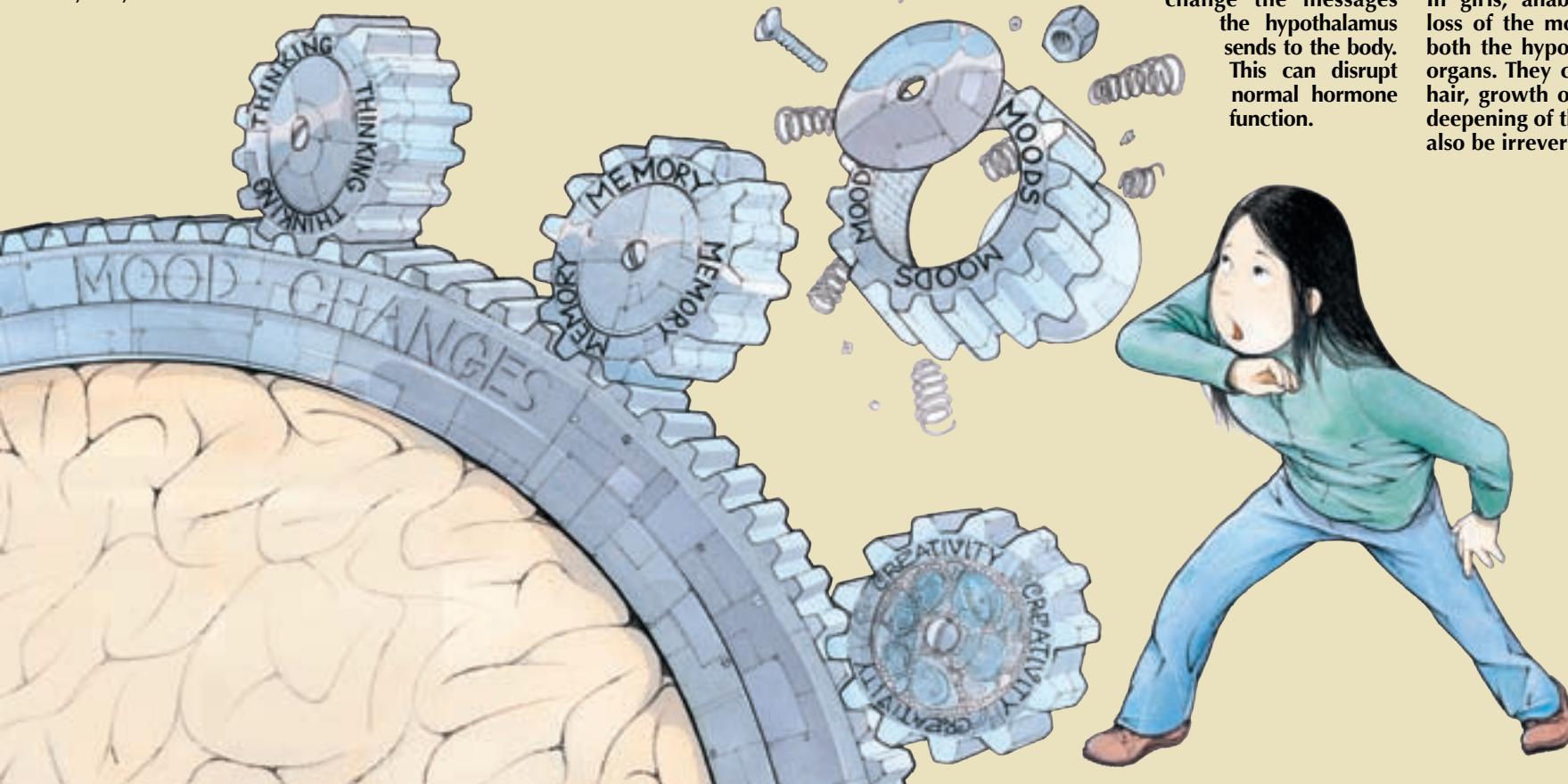


Do Anabolic Steroids Really Make the Body Stronger?

You may have heard that some athletes use anabolic steroids to gain size and strength. Maybe you've even seen an anabolic steroid user develop bigger muscles over time.

But while anabolic steroids can make some people look stronger on the outside, they may create weaknesses on the inside.

For example, anabolic steroids are bad for the heart—they can increase fat deposits in blood vessels, which can cause heart attacks and strokes. They may also damage the liver. Steroids can halt bone growth—which means that a teenage steroid user may not grow to his/her full adult height.



Anabolic Steroids Affect the Brain

Scientists are still learning about how anabolic steroids affect the brain, and in turn, behavior. Research has shown that anabolic steroids may trigger aggressive behavior in some people. This means that someone who abuses anabolic steroids may act mean to people they're normally nice to, like friends and family, and they may even start fights. Some outbursts can

be so severe they have become known in the media as “roid rages.” And when a steroid abuser stops using the drugs, they can become depressed, even suicidal. Researchers think that some of the changes in behavior may be caused by hormonal changes that are caused by steroids, but there is still a lot that is not known.

Anabolic Steroids Can Confuse the Brain and Body

Your body's testosterone production is controlled by a group of nerve cells at the base of the brain, called the hypothalamus. The hypothalamus also does a lot of other things. It helps control appetite, blood pressure, moods, and reproductive ability.

Anabolic steroids can change the messages the hypothalamus sends to the body. This can disrupt normal hormone function.

In guys, anabolic steroids can interfere with the normal production of testosterone. They can also act directly on the testes and cause them to shrink. This can result in a lower sperm count. They can also cause an irreversible loss of scalp hair.

In girls, anabolic steroids can cause a loss of the monthly period by acting on both the hypothalamus and reproductive organs. They can also cause loss of scalp hair, growth of body and facial hair, and deepening of the voice. These changes can also be irreversible.