

DRUGS: USES AND ABUSES

STEROIDS

Teacher's Guide



INTRODUCTION

This Teacher's Guide provides information to help you get the most out of *Drugs: Uses and Abuses – Steroids*. The contents in this guide will allow you to prepare your students before using the program and present follow-up activities to reinforce the program's key learning points.

In this program the former NFL player Charles Hunt, as well as a pharmacist, a police officer, an addiction counselor, a trainer, a swim coach, a recovering abuser, and others explore the history and biological effects of steroids. Using case studies and personal experiences, anabolic steroid abuse and the drug's many side effects are vividly illustrated. Some of these side effects include impotence, liver tumors, renal failure, and "roid rage," which can lead to violence and even suicide.

LEARNING OBJECTIVES

After viewing the program, students will be able to:

- Name three different types of steroids.
- Compare two different types of steroids and their uses.
- Discuss the advantages and disadvantages to using steroids.
- Explain the side effects of anabolic steroid use.
- Understand the reasons people choose to use steroids.
- Define GHB and explain how it is used.

EDUCATIONAL STANDARDS

National Standards

This program correlates with National Standards for Family & Consumer Science Education by the Family and Consumer Science Education Association, Project 2061 Benchmarks for Science Literacy by the American Association for the Advancement of Science and the National Health Education Standards: Achieving Health Literacy by the Joint Committee on National Health Education Standards. The content has been aligned with the following educational standards and benchmarks from these organizations.

- Analyze factors that impact human growth and development.
- Analyze strategies that promote growth and development across the life span.
- Analyze conditions that influence human growth and development.
- Demonstrate the ability to advocate for personal, family, and community health.
- Demonstrate the ability to use goal-setting and decision-making skills to enhance health.
- Set reasonable and attainable goals and develop positive decision-making skills.
- Analyze the influence of culture, media, technology, and other factors on health.
- Describe and analyze how one's cultural background, messages from the media, technology, and one's friends influence health.
- Demonstrate the ability to practice health-enhancing behaviors and reduce health risks.
- Identify responsible and harmful behaviors, develop health-enhancing strategies, and manage stress.
- Comprehend concepts related to health promotion and disease prevention.
- Understand that the immune system is designed to protect against microscopic organisms and foreign substances that enter from outside the body and against some cancer cells that arise within.

- Understand that the nervous system works by electrochemical signals in the nerves and from one nerve to the next. The hormonal system exerts its influences by chemicals that circulate in the blood. These two systems also affect each other in coordinating body systems.
- Understand that communication between cells is required to coordinate their diverse activities. Some cells secrete substances that spread only to nearby cells. Others secrete hormones, molecules that are carried in the bloodstream to widely distributed cells that have special receptor sites to which they attach. Along nerve cells, electrical impulses carry information much more rapidly than is possible by diffusion or blood flow. Some drugs mimic or block the molecules involved in transmitting nerve or hormone signals and therefore disturb normal operations of the brain and body.
- Understand that various body changes occur as adults age. Muscles and joints become less flexible, bones and muscles lose mass, energy levels diminish, and the senses become less acute. Women stop releasing eggs and hence can no longer reproduce. The length and quality of human life are influenced by many factors, including sanitation, diet, medical care, sex, genes, environmental conditions, and personal health behaviors.
- Understand that toxic substances, some dietary habits, and personal behavior may be bad for one's health. Some effects show up right away, others may not show up for many years. Avoiding toxic substances, such as tobacco, and changing dietary habits to reduce the intake of such things as animal fat increases the chances of living longer.
- Understand that benefits and costs of proposed choices include consequences that are long-term as well as short-term, and indirect as well as direct. The more remote the consequences of a personal or social decision, the harder it usually is to take them into account in considering alternatives. But benefits and costs may be difficult to estimate.

This represents the work of the Joint Committee on National Health Education Standards. Copies of National Health Education Standards: Achieving Health Literacy can be obtained through the American School Health Association, Association for the Advancement of Health Education or the American Cancer Society. Reprinted with permission.

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National Standards for Family and Consumer Science Education reprinted with permission.

English Language Arts Standards

The activities in this Teacher's Guide were created in compliance with the following National Standards for the English Language Arts from the National Council of Teachers of English.

- Use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).
- Adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
- Use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
- Conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, people) to communicate their discoveries.

Standards for the English Language Arts, by the International Reading Association and the National Council of Teachers of English, Copyright 1996 by the International Reading Association and the National Council of Teachers of English. Reprinted with permission.

Technology Standards

The activities in this Teacher's Guide were created in compliance with the following National Education Technology Standards from the National Education Technology Standards Project.

- Demonstrate a sound understanding of the nature and operation of technology systems.
- Develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
- Practice responsible use of technology systems, information, and software.
- Use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- Use technology resources for solving problems and making informed decisions.
- Use technology to locate, evaluate, and collect information from a variety of sources.

The ISTE National Education Technology Standards Project standards are reprinted with permission.

MAIN TOPICS

Topic 1: What is a Drug?

The first section provides an overview of what a drug is and how drugs are used.

Topic 2: Classes of Steroids

This section presents information on the three categories of steroids, how they are used, and which steroid is most commonly abused.

Topic 3: Anabolic Steroids

How and why anabolic steroids are abused is the focal point of this section. The psychological factors affecting addiction to steroids is mentioned, as well as the general side effects of short-term and long-term use in both males and females.

Topic 4: Roid Rage

The psychological impact of steroids and the behavioral changes experienced by people using them is described. The danger of roid rage to the individual abusing steroids as well as to those around them is explored.

Topic 5: GHB

The synthetic chemical GHB is described. Information is presented concerning how the drug originated, the effects of the drug on the body, its use as a "date rape" drug, and how it can be ingested.

Topic 6: Steroid Summary

The final section summarizes the main points presented by the video providing information on what an anabolic steroid is, who abuses these steroids, the psychological and physical effects of steroid use, and the legal and illegal use of steroids.

FAST FACTS

- There are three different classes of steroids: anabolic steroids, corticosteroids, and estrogenic hormones.
- Some steroids, such as cholesterol, vitamin D, and various types of hormones, occur naturally in the body.
- Anabolic steroids are the most commonly abused steroids; teens and athletes are both known to abuse them.
- Canadian sprinter Ben Johnson lost his gold medal, which he earned in the 100-meter dash, after tests showed he used steroids.
- The International Olympic Committee and many other amateur and professional sports organizations have banned the use of anabolic steroids.
- People who inject steroids and share needles are at risk for contracting HIV and hepatitis.
- Steroid use by adolescents may prematurely stop the lengthening of bones, resulting in stunted growth.
- In a recent survey, nearly 25% of youths reported that the illegal sale of drugs occurred in their neighborhoods; one in six were approached by someone selling drugs in the month before the survey.
- Some possible side effects from steroid use include acne, baldness, and oily skin. More severe side effects include mood swings, increased aggressiveness, enlarged heart, liver problems, and renal failure.
- Athletes have been known to abuse anabolic steroids since the 1950's.
- Anabolic steroids are synthetic substances related to the male sex hormones called androgens. Doses taken by abusers can be up to 100 times greater than doses used for treating medical conditions.
- Anabolic steroids were developed in the late 1930's primarily to treat hypogonadism, a condition in which the testes do not produce sufficient testosterone for normal growth, development, and sexual functioning.
- Most steroids used illegally are obtained through the black market from underground laboratories and foreign sources.
- Most anabolic steroids users are male. Among male students in 2003, use of these substances was reported by 1.8 percent of 8th graders, 2.3 percent of 10th graders, and 3.2 percent of 12th graders.
- A heavy demand for anabolic steroids has generated a black market with estimated sales of up to \$400 million a year, according to the NIDA Research Report *Anabolic Steroids: A Threat to Body and Mind*.
- Users of anabolic steroids often combine several different types of steroids to increase their effectiveness, a method called "stacking."
- Lyle Alzado, a former professional football player, died from brain cancer, which he believed was caused by longtime abuse of anabolic steroids.

VOCABULARY TERMS

abuse: To use wrongly or improperly.

addiction: Uncontrollable use of habit-forming drugs.

adrenal glands: Glands, located above each kidney, that secrete hormones, e.g., adrenaline.

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

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

blood: Its role is the transportation of red and white blood cells and platelets; also helps distribute heat throughout the body.

corticosteroids: A family of drugs that include cortisol, an adrenal hormone found naturally in the body, as well as synthetic drugs. Both natural and synthetic corticosteroids are anti-inflammatory compounds.

drug: A chemical compound or substance that can alter the structure and function of the body. Psychoactive drugs affect the function of the brain, and some of these may be illegal to use and possess.

estrogenic hormones: Hormones used in oral contraceptives, the prevention of breast cancer, and endometrial cancer.

gamma hydroxybutyric acid: Commonly known as GHB, is a powerful, rapidly acting central nervous system depressant. It is often ingested as a clear liquid with alcohol by young adults and teens to be used as a pleasure enhancer that depresses the central nervous system and induces intoxication.

heart: The hollow muscular organ that by rhythmic contractions and relaxations keeps the blood circulating throughout the body.

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

limbic system: A set of brain structures that generates our feelings, emotions, and motivations. It is also important in learning and memory.

megarexia: Describes the inflated attention given to the weight gain that usually comes when the use of anabolic steroids stops.

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

roid rage: A common term referring to the aggressive and hostile behavior exhibited by users of anabolic steroids. Severe aggressive behavior that may result in violence, such as fighting or destroying property.

route of administration: The way a drug is put into the body. Users get drugs into their body by eating, drinking, inhaling, injecting, snorting, smoking, or absorbing them through mucous membranes.

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

steroid: Any of several fat-soluble organic compounds having as a basis 17 carbon atoms in four rings; many have important physiological effects.

synthetic: Pertaining to compounds formed by chemical reaction in a laboratory, as opposed to those of natural origin.

PRE-PROGRAM DISCUSSION QUESTIONS

1. In what ways might the media affect a person's choices regarding their health?
2. What types of behaviors make a person fit in with a group of friends?
3. How has the competitiveness of our society influenced athletes, both amateurs and pros?
4. Why do you think teenagers use steroids? Under what conditions would you be tempted to consider using them?
5. Do you feel pressure to be stronger, or better at sports? Where does this pressure come from?

POST-PROGRAM DISCUSSION QUESTIONS

1. What factors might influence someone to resist using drugs?
2. If you or a friend had a substance abuse issue or problem, where could you go for help?
3. Should a supplement be considered safe just because it is available in stores or through mail order?
4. Is it realistic to think that a healthy, attractive, and strong body can be achieved through short cuts like supplements? Why or why not?
5. Do people seek quick fixes and short cuts in other areas of life? Explain your opinion. If your answer is yes, why do you think those short cuts are so appealing?

GROUP ACTIVITIES

Why Would Anyone Use Steroids?

In small groups, role-play a scenario where a teen is considering using steroids. One member of the group should play the role of the teen and the remainder of the group should take on the roles of a trusted friend, teacher, parent, or coach. After each role-play scene, the class should discuss how the characters dealt with the various factors and emotions that may lead to teen steroid abuse, including low self-esteem, peer pressure, or the desire to excel in sports.

Been There

Through a local bodybuilding club, gym, or law enforcement organization, arrange for a teen or young person who has abused steroids to talk to the class about the social, emotional, and legal consequences of using the drug.

INDIVIDUAL STUDENT PROJECTS

Body Image Journal

For one week, keep a journal to record incidents in which you are exposed to outside sources that affect your perceptions of your body. These outside sources can include commercials; advertisements in magazines, newspapers, billboards; television shows; movies; and news broadcasts. Record what the outside source was, what message it was trying to send regarding body image, and your feelings in regard to the message or about yourself.

Opinion Poll

Conduct an opinion poll that focuses on the controversy of steroid use in sports today. Develop eight to ten opinion statements. Some simple opinion statements might be 1) All high schools should have drug information programs for their athletes. 2) Some governments should encourage athletes to use anabolic steroids in Olympic competition so they have a better chance of winning medals. 3) Physicians and athletic trainers who provide anabolic steroids to athletes should lose their licenses to practice and have to pay large fines.

Next, ask five friends or family members to respond to the opinion statements. Ask each participant to record whether they agree or disagree with each statement. After the interview, compile your findings into a graph format and write a summary of what your findings show.

INTERNET ACTIVITIES

The Ben Johnson Story

At the Seoul Olympics in 1988 Ben Johnson won an Olympic gold medal for his performance in the 100-meter dash. Later, his medal was taken away from him because he tested positive for steroid use. Research this event in Olympic history and write a newspaper editorial to present your opinion about one or more of the following questions:

- Why did Ben Johnson take the anabolic steroid Stanozolol?
- Did Ben Johnson deserve to lose his medal?
- Why do some athletes feel that winning at all costs is more important than achieving your personal best?

Laws Against Steroids

Research state and federal laws regarding the use and sales of illegal steroids, including the possible penalties. How prevalent is steroid use? Create a scrapbook of steroid arrest stories, studies, and reports from newspapers and magazines.

ASSESSMENT QUESTIONS

Q: What are the three different types of steroids?

A: Anabolic steroids, corticosteroids, and estrogenic steroids

Feedback: Steroids are chemical compounds that share a particular molecular structure. While some steroids occur naturally, others are created synthetically to treat conditions like inflammation, heart disease, anemia, and different forms of cancer. Steroid compounds can even be found in medicines for nasal congestion.

Q: The most commonly abused steroid is _____.

- (a) hydrocortisone
- (b) estrogenic
- (c) anabolic
- (d) corticosteroids

A: (c)

Feedback: Anabolic steroid is the popular name for a synthetic substance related to the male sex hormones, androgens.

Q: Why are anabolic steroids abused?

A: Anabolic steroids are commonly abused because, when taken in high doses, they help to build muscles, increase lean body mass, and improve physical performance.

Feedback: During the 1930's, scientists discovered that anabolic steroids could facilitate the growth of skeletal muscle in laboratory animals. This led to the use of the compounds, first by bodybuilders and weightlifters, and then by athletes in other sports. Steroid abuse has become so widespread in athletics that it affects the outcome of sports contests.

Q: Only males abuse anabolic steroids. (*True or False*)

A: False

Feedback: Among both adolescents and adults, steroid abuse is higher among males than females. However, steroid abuse is growing most rapidly among young women.

Q: What are some side effects of taking anabolic steroids?

A: The major side effects from abusing anabolic steroids can include liver tumors, cancer, jaundice, fluid retention, high blood pressure, increase in LDL (bad cholesterol), and decreases in HDL (good cholesterol). Other side effects include kidney tumors, severe acne, and trembling.

Feedback: In addition to general side effects there are also gender specific side effects. Side effects for men include shrunken testicles, reduced sperm count, impotence, infertility, baldness, development of breasts, difficulty or pain in urinating, and an enlarged prostate. For women side effects include growth of facial hair, changes in or cessation of the menstrual cycle, enlargement of the clitoris, deeper voice, and smaller breasts.

Q: Using multiple types of steroids at the same time is called _____.

- (a) performance enhancement
- (b) roid rage
- (c) megarexia
- (d) stacking

A: (d)

Feedback: Users often combine several different types of steroids to boost their effectiveness. This method is called stacking. In another method, called cycling, users take steroids for 6 to 12 weeks or more, stop for several weeks, and then start again.

Q: What is the psychological impact of taking steroids?

A: The psychological and behavioral impact of anabolic steroids, especially in high doses, includes increased irritability and aggression. Physical fighting, committing armed robbery, and use of force are examples of aggressive acts.

Feedback: Increased testosterone levels in the blood are associated with masculine behavior, aggressiveness, and increased sexual desire. Increased aggressiveness may be beneficial for athletic training, but may also lead to violence in other arenas.

Q: Taking steroids is not addictive. (*True or False*)

A: False

Feedback: Physical addiction occurs once the body adjusts to the synthetic drug. At this time, normal production of testosterone stops. When the drugs are discontinued, there is a period of time for natural hormone withdrawal symptoms such as severe depression, muscle aches, fatigue, anxiety, sexual impotence, and poor self esteem. To avoid this state, the steroid user often takes mood altering drugs or more anabolic steroids.

Q: Which of the following has been called “the date rape drug”?

- (a) gamma hydroxybutyric acid (GHB)
- (b) hydrocortisone
- (c) marijuana
- (d) corticosteroids

A: (a)

Feedback: In the United States, GHB had been marketed to body builders as a growth hormone stimulant and as a replacement for L-tryptophan, a food supplement which reportedly induced sleep.

Q: Can steroids ever be used in a beneficial way?

A: Yes, steroids can be used for treating delayed puberty, some types of impotence, wasting of the body due to conditions such as HIV, some types of anemia, and osteoporosis. The U. S. Food and Drug Administration has approved the use of selected anabolic steroids for treating specific types of anemia, some breast cancers, osteoporosis, and endometriosis.

Feedback: Anabolic steroids can be taken orally by injection or in cream or gels. Dosages prescribed by doctors depend on the medical condition, its severity, and age of the patient. In illegal use, steroid dosages vary greatly and can be 10 to 40, and even sometimes 100 times higher than the recommended dose.

Q: How do people obtain anabolic steroids?

A: Anabolic steroids are manufactured both legally and illegally outside the United States and smuggled in, usually through the mail. They are then manufactured legally and diverted to the black market, or manufactured illegally in the United States. Many substances sold as anabolic steroids are diluted, contaminated, or may even be fake.

Feedback: Under federal law, it is illegal to possess or distribute anabolic steroids for non-medical use.

ADDITIONAL RESOURCES

WEB SITES

Anabolic Steroid Abuse

www.steroidabuse.org

National Institute on Drug Abuse for Teens

www.teens.drugabuse.gov

U.S. Department of Health and Human Services

www.samhsa.gov

Office of National Drug Control Policy

www.whitehousedrugpolicy.gov

HOTLINES

Center for Substance Abuse Treatment

1-800-ALCOHOL (252-6465)

National Council on Alcoholism & Drug Dependency

1-800-NCA-CALL (622-2255)

BOOKS

Addiction: The "High" That Brings You Down by Miriam Smith McLaughlin, Sandra Peyser Hazouri. Enslow Publishers, Inc., 1997. ISBN: 0894909150

Life's Too Short!: Pull the Plug on Self-Defeating Behavior and Turn on the Power of Self-Esteem by Abraham J. Twerski. St. Martin's Press, 1997. ISBN: 0312155700

A Teen's Guide To Living Drug-Free by Bettie B. Youngs, Jennifer Leigh Youngs, Tina Moreno. Health Communications, 2003. ISBN: 0757300413

OTHER PRODUCTS

Facts on...Drugs, CD-ROM, Cambridge Educational

Conversational in tone yet authoritative in content, this interactive electronic reference guide gives the scoop on dozens of commonly abused drugs, including marijuana, cocaine and crack, heroin, ecstasy, methamphetamine, PCP, inhalants, and steroids, as well as prescription and over-the-counter medicines. Plenty of images and audio effects support the disc's targeted data on the different categories and types of drugs, the abuse of street drugs and medicinal drugs, the effects of specific drugs on the body, warning signs and potential consequences of drug abuse, and treatment for drug addiction, while fact vs. myth quizzes help students recognize dangerous misinformation that could otherwise lead them to make tragic choices.

Order #: 31862, www.cambridgeeducational.com, 1-800-468-4227

Drugs, Poster Set, Cambridge Educational

This series of brightly illustrated, attention-grabbing posters explains, in detail, the harsh realities of substance abuse and the life-threatening decisions kids make today. With compelling up-to-date factual information, these posters cover the most popular drugs in teenage society. Use them to inform, explore myths, and promote valuable discussions.

Order #: 10901, www.cambridgeeducational.com, 1-800-468-4227

Close to Home: Moyers on Addiction, VHS /DVD, Films for the Humanities & Sciences

In this critically acclaimed five-part series, Bill Moyers puts a human face on an American public health crisis—drug and alcohol addiction. Each program takes on a different facet of addiction and recovery—from studies of brain pathology and genetic risk, to various prevention and treatment approaches, to a look at our public policy. The intimate experience of addiction is shared by the addicts themselves, their parents, children, and those helping them toward recovery.

The series includes *Portrait of Addiction*; *The Hijacked Brain*; *Changing Lives*; *The Next Generation*; *The Politics of Addiction*

Order #: 7679, www.films.com, 1-800-257-5126

Drug-Pushing Parents: Just Say—Yes?, VHS/DVD, Films for the Humanities & Sciences

According to a new survey, one in five candidates for drug treatment at Phoenix House was introduced to drugs by his or her parents. Addiction experts including Mitchell Rosenthal, president of Phoenix House, and Alyse Booth, spokesperson for Columbia University's National Center for Addiction and Substance Abuse, agree that although the study is limited in scope, the figures are alarming. Are parents coming to view drug use as merely another teenage rite of passage? And how can drug prevention campaigns help children when their own parents do not get the message? This program goes to the heart of these questions.

Order #: 11449, www.films.com, 1-800-257-5126

Substance Abuse: Risks and Responsibilities, VHS/DVD, Cambridge Educational

"I can't get hooked on drugs if I only try them once." "Alcohol doesn't really affect me." "Over-the-counter medications are totally safe." This authoritative four-part series dispels these and other dangerous myths as it clearly presents the facts about drugs, alcohol, tobacco, and caffeine. The series includes *Using Pharmaceutical Drugs Safely*, *Drinking Responsibly*, *Understanding the Risks of Tobacco and Caffeine*, *Preventing Drug Abuse*

Order #: 11405, www.cambridgeeducational.com, 1-800-468-4227

The Battle over How to Fight the War on Drugs, VHS/DVD, Films for the Humanities & Sciences
Should America shift its strategy in the war on drugs from prevention, interdiction, and prosecution to a policy of treatment, regulation, and control? In this program, *ABC News* anchor Forrest Sawyer moderates a heated debate between Charles Blanchard, Chief Counsel of the White House Drug Control Policy Office, and Ethan Nadelmann, Director of the Lindesmith Center. Together they analyze statistics to define criteria for success in the war on drugs and assess the implications of an approach that tempers the military and judicial elements, stressing instead the importance of public health and rehabilitation.

Order #: 9279, www.films.com, 1-800-257-5126

Everyday Addictions, VHS/DVD, Films for the Humanities & Sciences

Nicotine, alcohol, and gambling—three very common addictions—are among the most preventable causes of premature death through illness or suicide in the U.S. In this program, doctors from Brown University's School of Medicine and Harvard Medical School talk with host Kat Carney about the psychological, physiological, and genetic components of addiction while considering treatments such as hypnotherapy, Naltrexone therapy, and experimental vaccines. Some of the medical outcomes of addiction, including lung cancer, cirrhosis of the liver, and clinical depression, are also discussed, as well as a new form of dependency: addiction to the Internet.

Order #: 29617, 1-800-257-5126, www.films.com



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