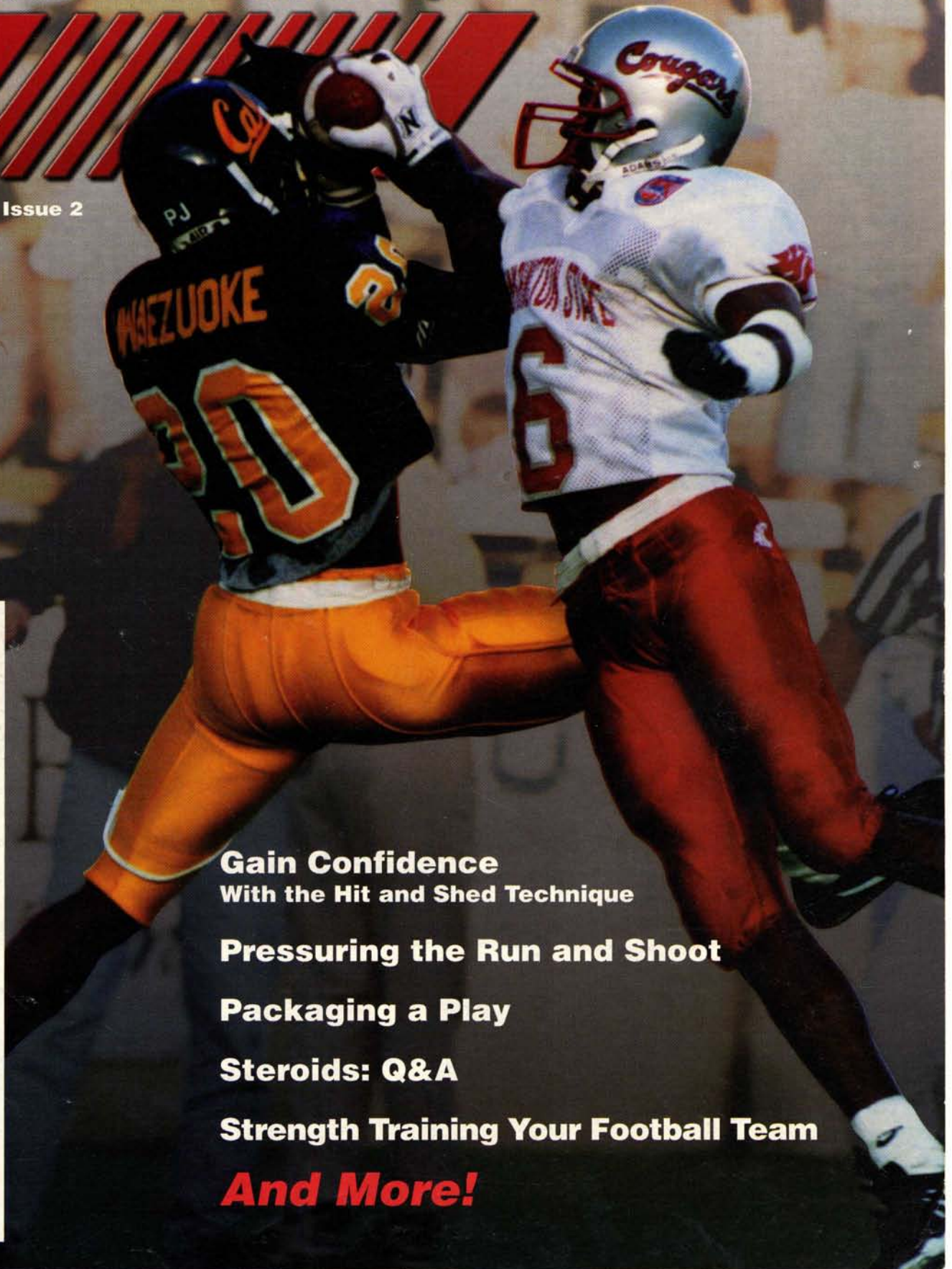


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# STEROIDS

## Q&A

**By Matt Brzycki,  
Strength Coach  
Princeton University**

**Q: What are steroids?**

**A:** Technically referred to as being “anabolic-androgenic,” steroids are synthetic derivatives of the powerful male sex hormone, testosterone. The “anabolic” or growth-promoting effects of testosterone include increases in skeletal muscle mass, nitrogen retention and protein synthesis. Its “androgenic” or masculinizing effects include increases in facial and body hair, a deepening of the voice and a heightened libido. Steroids are derived from testosterone which is chemically modified to primarily enhance the anabolic effects and to decrease the androgenic effects. Steroids can be broadly categorized as those that are administered by either ingestion or injection.

**Q: How widespread is the use of steroids?**

**A:** The results of a 1988 study indicate that 6.64 percent of twelfth grade male students either use or have used steroids and that over two thirds of the user group initiated use when they were 16 years of age or younger. Extrapolating this data suggest that 250,000 to 500,000 adolescents are using or have used steroids. Clearly, the use of anabolic steroids is reaching epidemic proportions.

**Q: Do steroids really work?**

**A:** In general, it can be concluded that the use of anabolic steroids can often increase muscular strength beyond that possible with training and diet alone. This is particularly true of experienced weight lifters. Anabolic steroids seem to have no positive effect on aerobic capacity.

**Q: What effects do steroids have on the liver?**

**A:** Virtually all literature reports that liver disorders are a consequence of the misuse of anabolic steroids. The American College of Sports Medicine notes that the most serious liver complications associated with anabolic steroid use are peliosis hepatitis (the etiology) and liver tumors. Both of these conditions are considered irreversible and life-threatening. Rupture of the blood-filled cysts or liver failure resulting from peliosis hepatitis is fatal.

Numerous reports have been published linking the use of anabolic steroids with liver tumors in males. Moderate to heavy use of anabolic steroids in otherwise healthy individuals will cause liver cancer and possible death. Steroid users may have cancers growing in their livers but the symptoms have yet to appear.

The use of anabolic steroids also impairs the excretory function of the liver and results in jaundice. Jaundice, which gives the eyes and skin a yellowish tint, occurs at relatively low dosages. Higher doses of anabolic steroids appear to increase the incidence of liver dysfunction.

**Q: Do steroids effect the cardiovascular system?**

**A:** Of the five major coronary risk factors noted by the American College of Sports Medicine, just two of the risk factors increased by the use of anabolic steroids are hypertension and cholesterol levels. Numerous authors have reported increased blood pressure and elevated cholesterol levels as a result of steroid use. In addition, there is strong evidence that moderate doses of anabolic steroids have the potential to cause a heart attack by “slugging the arteries that nourish the heart.”

**Q: Do steroids effect the male reproductive system?**

**A:** When a male starts to introduce extra testosterone into his body, his internal regulatory system will reduce its own production in order to maintain a stable internal environment. If too much “foreign” testosterone is added, his body will no longer produce its own supply. A 1984 review reported that decreased plasma testosterone was common in athletes who used anabolic steroids.

This chemical balancing results in the increased potential for numerous feminizing side effects that target the male reproductive system. For example, a decreased sperm count and testicular atrophy have been well-documented. One researcher reported that the sperm count of 15 athletes decreased an average of 73 percent over two months of anabolic steroid treatment. Another well-documented side effect related to this hormonal irony in gy-

necomastia, is the appearance of enlarged, female-like breasts on the male physique. Other possible male-specific side effects include a high-pitched voice, prostate enlargement, sterility and functional impotency.

**Q: Are there any psychological side effects from steroid use?**

**A:** The use of anabolic steroids — even in low doses — potentiates certain psychological behavior patterns. In structured interviews of 41 bodybuilders and football players, five of the subjects (12.2 percent) met the criteria for psychotic symptoms during periods in which they used steroids. None of the subjects had psychotic symptoms when they were not taking steroids. Of the five subjects who had psychotic symptoms, one had auditory hallucinations of voices and the other four developed various delusions. Another five subjects met the criteria for a manic episode during steroid exposure. One of these subjects bought an old car and deliberately drove it into a tree at 40 miles per hour while a friend videotaped him. This research suggests that major psychiatric symptoms may be a common adverse effect of anabolic steroid use.

Additional possible psychological side effects include extreme mood swings, sleeping disturbances, euphoria, paranoia, irritability, an increased or a decreased libido, anxiety and delusions.

Perhaps the most frequently documented psychological side effect is an increased level of unpredictable hostility and aggression. This heightened aggressive behavior is commonly referred to as “roid rage.” A classic example of roid rage was demonstrated by one individual whose steroid-amplified aggression involved him in numerous brawls and created violent thoughts like “crushing people to

death” and “tearing off their limbs.” According to data from the 1991 National Household Survey on Drug Abuse, more than 80 percent of 12-17 year old who used anabolic steroids stated that they had acted in an aggressive way against people or had committed a crime against property in the previous year.

Steroid users may also experience psychological dependency. This can lead to depression-related withdrawal when the use of steroids is discontinued. Linked to the psychological dependency on anabolic steroids is a condition known as “reverse anorexia” or “megarexia.” As the name implies, reverse anorexia is the opposite of anorexia. In anorexic females, no matter how much weight is lost, the woman still sees herself as too fat; in megarexia males, no matter how much weight is added, the man still sees himself as too thin.

**Q: Do steroids pose additional dangers to adolescents?**

**A:** Adolescents who use anabolic steroids may experience a premature fusing of the epiphyseal growth plates located in the ends of the long bones. A premature closure of the epiphyseal plates before completion of the normal growth cycle will result in stunted growth — which is not reversible.

**Q: Are there any other side effects from the use of steroids?**

**A:** Steroid users risk blood poisoning and the spread of communicable diseases — including AIDS — from contaminated needles as well as neural dysfunction as a result of improperly placed needles. Additionally, there is a risk of sudden death accompanying injection due to anaphylactic shock.

The use of anabolic steroids can cause an increase in oil production by the sebaceous glands of the skin and cause

acne to develop anywhere on the body — usually on the back. Acne is a well-documented side effect of anabolic steroid use.

Many other possible side effects are commonly noted in the literature including fluid retention, unprovoked nose bleeds, arthritis and peptic ulcers. Alopecia has also been reported.

**Q: Does the use of steroids lead to other drug use?**

**A:** Steroid use often leads to multiple drug abuse. Steroid users may start using other drugs in an attempt to control the unwanted side effects of steroid use. For example, amphetamines are taken to combat depression and diuretics are used to avoid fluid retention and to lower the blood pressure. Based on data from the 1991 National Household Survey on Drug Abuse, males who had used anabolic steroids at some time in their lives were about 2-3 times more likely to report current use of illicit drugs.

**Q: Has anyone ever died from using steroids?**

**A:** In 1989, the Ashtabula County (Ohio) coroner who examined the body of a high school football player officially stated that the 17 year old's heart attack was in part attributable to the use of anabolic steroids. This marked

the first time that anabolic steroids had been legally linked to a death in the United States.

**Q: What are the current legal ramifications of using steroids?**

**A:** The Anabolic Steroid Control Act of 1990 went into effect at the end of February 1991. Under this act, anabolic steroids are categorized as Schedule III drugs, which makes their use restricted in the same manner as some narcotics, depressants and stimulants. Current legislation has penalties that includes a maximum \$1,000 fine and a maximum one year sentence for possession (first offense) as well as \$250,000 fine and up to 5 years in prison for trafficking. The act gives federal drug enforcements officials the authority to regulate manufacturers, wholesalers, doctors and pharmacies. It also allows for the seizure of assets and money earned throughout the trafficking of steroids.

Aside from the criminal ramifications associated with the provision of anabolic steroids by personal who are not authorized to prescribe them, as well as the direct harm which may come to steroid users — those who provide anabolic steroids to others may face additional civil claims and lawsuits. For example, when anabolic steroids

are provided by non physicians — such as coaches and trainers, lawsuits brought against those providing the steroids may be coupled with additional allegations that the individual provider was illegally engaged in the practice of medicine. Under these circumstances, there is a greater chance of finding of negligence and liability.

**Q: How can I tell if one of my players is using steroids?**

**A:** Because steroids can be taken orally in tablet/pill form or by direct injection into a muscle, users may have needles, syringes, and pill bottles either hidden or in their possession. Steroid users often have puncture marks, bruises, scar tissue, or calluses on their upper thighs or buttocks from steroid injection. Many physical indicators of steroid use are related to the adverse side effects. For example, steroid users often have a bloated, puffy look to their faces and skin due to fluid retention. Another physical sign is that the eyes and skin of a steroid user may have a somewhat yellowish tint from jaundice. Several other physical signs of steroid use are increased incidence of stretch marks, unprovoked nosebleeds, gynecomastia, and severe acne, especially on the back. Finally, sudden and significant increases in size, weight, and strength can also be signs of steroid use.

In terms of psychological signs, violent and unpredictable rage is a noticeable side effect of steroid use. Just because one or two of these symptoms are present doesn't necessarily indicate steroid use. However, if more than a few signs are present, the involvement of anabolic steroids is likely.

*Matt Brzycki is the Coordinator of Health Fitness, Strength, and Conditioning Programs at Princeton University. He has authored more than 135 articles on strength and fitness and a book, "A Practical Approach to Strength Training," which is in its third edition.*



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