

Pumped Up and Strung Out

By BRUCE BOWER

Two years ago, a young man with bulging muscles trudged into a Lexington, Ky., treatment center for alcohol and drug abusers and acknowledged his weakness. The 22-year-old body builder told surprised psychiatrists he was hooked on anabolic steroids — synthetic versions of the male hormone testosterone.

As a noncompetitive weight lifter, he had begun taking steroids nine months earlier to increase his muscle mass. Impressive muscular development soon followed, and his weight shot up from 175 to 218 pounds. But he still felt too small and "not really all that muscular." For the past six months, he had taken a mix of four different steroids without stopping for more than two weeks at any one time. While using the drugs, he felt depressed, slept less and lacked energy; occasional emotional flare-ups strained his relations with his family. During the increasingly shorter steroid-free intervals, he experienced intense craving for the drugs and worried about stalling his muscular development.

After participating in the addiction treatment program for one week, the man left the center, citing inadequate insurance coverage. Psychiatrists there do not know how he fared on his own, but they say their experiences with alcohol and drug addicts provide little reason for optimism.

Medical and psychiatric journals feature a growing number of case reports describing body builders and athletes who abuse anabolic steroids, known as "roids" in gym argot. Yet researchers still know little about the extent of steroid dependence, and they can only speculate about the physiological or psychological mechanisms underlying that dependence.

Two surveys of intensive weight lifters in Michigan and Ohio now provide a

glimpse of the addictive potential and psychiatric effects of these drugs.

About 14 percent of steroid users get hooked on the muscle-expanding hormones, concludes a research team at the Cleveland Clinic, a private hospital. The investigators interviewed 163 weight lifters, including 16 women, who pumped iron at local gyms at least six hours a week. The sample consisted of 88 steroid abstainers, 31 current steroid users and 44 past users. Robert J. Dimeff, who conducted the study with Donald A. Malone Jr. and John Lombardo, reported the findings in May at the annual meeting of the American Psychiatric Association in New Orleans.

For their definition of full-blown steroid abuse, Dimeff's group adapted the psychiatric criteria for substance abuse. Individuals with at least three of the following symptoms were considered steroid dependent:

- more steroids taken than intended
- an unachieved desire to control or cut down on steroid use
- a great deal of time spent on steroid-related activities
- replacement of normal daily activities by steroid use
- continued use despite awareness of problems caused by steroids
- a marked tolerance of and need for larger doses
- frequent withdrawal symptoms or feelings of intoxication at work or home
- the use of steroids to relieve or avoid withdrawal symptoms.

About 18 percent of the past steroid users — compared with only about 13 percent of the current users — reported

Steroid addiction may haunt the quest for bigger muscles

symptoms that qualified them as steroid dependent. "We're not sure if current users are more likely to deny these problems," Malone told SCIENCE NEWS.

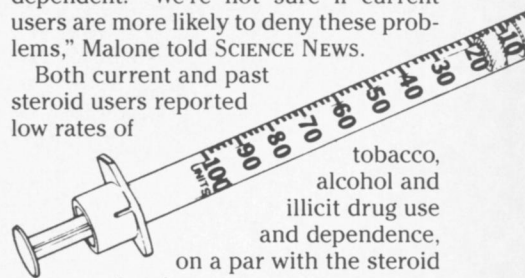
Both current and past steroid users reported low rates of

tobacco, alcohol and illicit drug use and dependence, on a par with the steroid abstainers.

In general, Malone says, steroid withdrawal symptoms included signs of depression, such as sleep problems and lack of appetite. In an earlier study at McLean Hospital in Belmont, Mass., researchers had found that nine of 41 body builders and football players experienced severe depression and mania only during steroid use (SN: 4/30/88, p.284). The Cleveland survey turned up a more ominous finding: About 7 percent of all steroid users in the sample reported thinking of suicide within a month of temporarily or permanently going off the hormones.

"Something about withdrawal from steroids precipitates major depression and suicidal thoughts in some people," Malone asserts.

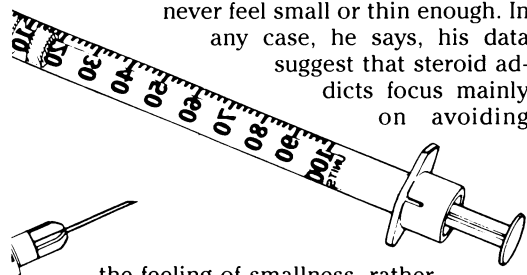
The Cleveland researchers might have elicited even more reports of steroid dependence if they had used anonymous questionnaires instead of face-to-face interviews, Malone says. Indeed, a Michigan survey using such a questionnaire identified addiction in 57 percent of weight lifters who took steroids, according to results presented at the psychiatric meeting.



In that study, 49 weight lifters — all steroid users — completed anonymous, self-administered questionnaires, and 28 qualified as addicts, reports Kirk J. Brower of the University of Michigan in Ann Arbor. Survey respondents used an average of three steroids at once — a practice known as “stacking” — and took 10 to 100 times the standard therapeutic dosages, a common practice among steroid abusers.

Like the Kentucky body builder, dependent users in Brower’s study reported pervasive dissatisfaction with their bodies and said they felt too small despite significant gains in weight and muscularity. Brower thinks this skewed self-perception may represent a reversal of anorexia nervosa, in which individuals — almost always female — compulsively diet to the point of starvation because they never feel small or thin enough. In

any case, he says, his data suggest that steroid addicts focus mainly on avoiding



the feeling of smallness, rather than on maintaining any presumed steroid benefits such as muscular physique and admiring comments.

Other researchers theorize that social benefits and the pleasure of having a heavily muscled body have an important influence on steroid dependence. “The appetite for these drugs is a product of our culture’s obsession with muscularity and athletic success for males,” contends Charles E. Yesalis of Penn State University in University Park.

Body builders represent a subculture quite distinct from professional athletes, Yesalis says. He maintains that many body builders are addicted primarily to having a big body and charting the beefy consequences of steroid use, and that the fear of withdrawal symptoms probably plays a minimal role in maintaining a steroid addiction.

To bolster his point, Yesalis notes that he and several colleagues have interviewed approximately 400 former professional athletes who regularly used steroids during their careers, and that none reported signs of dependence or continued steroid use after their retirement.

Some athletes — such as Canadian sprinter Ben Johnson, whose 1988 Olympic gold medal was revoked when he tested positive for steroids — use the

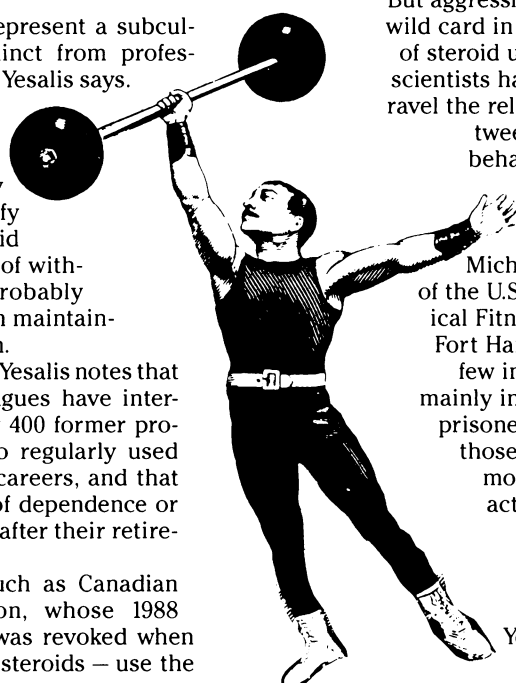
drugs primarily to speed their recuperation from increasingly high-intensity training sessions, rather than to foster muscle development, Yesalis points out.

While Brower and Yesalis stress psychological and social factors underlying steroid addiction, the synthetic hormones may also affect naturally occurring opioids and chemical messengers (such as dopamine) in the brain, which are apparently involved in heroin, cocaine and alcohol abuse. Alterations of these chemical systems could account for the feelings of euphoria and intoxication reported by some steroid addicts, as well as their withdrawal symptoms, according to a theory proposed in the Dec. 8, 1989 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION by Kenneth B. Kashkin of Yale University School of Medicine and Herbert D. Kleber, now with the Office of National Drug Control Policy in Washington, D.C.

Brower notes, however, that euphoria or “highs” following steroid use did not correlate closely with steroid dependence among the Michigan weight lifters. Half of the dependent users reported feelings of extreme pleasure soon after taking steroids, but one-third of the non-addicted users described the same reaction, he says.

Men hooked on steroids in the Michigan study also reported more instances of temper outbursts, arguments and fights. While reports of psychotic symptoms, such as delusions and hallucinations, were rare, the increased aggression described by these steroid addicts echoes anecdotal reports of individuals who fly into a so-called “roid rage,” harming themselves or others.

But aggression remains a wild card in the behavior of steroid users. Indeed, scientists have yet to unravel the relationship between aggressive behavior and *natural* testosterone surges, notes Michael S. Bahrke of the U.S. Army Physical Fitness School at Fort Harrison, Ind. A few investigations, mainly involving male prisoners, show that those who commit more aggressive acts and violent crimes have higher blood levels of testosterone. Yet these findings, says



Bahrke, leave the cause-and-effect question unanswered. Do heightened testosterone supplies jack up aggressive behavior, or is it the other way around?

In both animal and human studies, naturally elevated testosterone levels appear more closely linked to assertiveness than to assaultive or violent behavior, he argues. For instance, researchers have found that blood levels of testosterone in males often rise in the days following particularly exciting or successful events that enhance social status, such as college graduation or a big job promotion.

Elevated testosterone may help push violence-prone males toward violent behavior, without actually initiating that behavior, Bahrke contends.

Although scientists have much to learn about the behavioral effects of testosterone’s synthetic offshoots, one trend seems clear: Steroid use has spread far beyond isolated groups of body builders and professional athletes.

In a national survey of 3,403 high school seniors, conducted in 1987 by Yesalis and his co-workers, nearly 7 percent — mostly males — reported current or past steroid use. More than two-thirds of the steroid users who filled out the anonymous questionnaires said they first took the drugs before age 16, with some even reporting steroid exposure by age 11. Nearly half used more than one steroid at the same time, and one-third recalled five or more cycles of steroid use, each lasting an average of about two months.

One in three of the senior steroid users did not participate in interscholastic sports, Yesalis notes.

Youngsters involved in the heaviest and earliest steroid use perceived their health as excellent more often than occasional steroid users, he says. Moreover, many heavy users said they had no intention to quit even after the questionnaire stated that prolonged steroid use can lead to sterility and heart disease. Yesalis maintains that this response may indicate dependence on the drugs or a high risk of addiction.

“The steroid problem has been known about in professional sports for at least two decades, and in high school for at least one decade,” he asserts. Most professional and amateur sports organizations now have sanctions against steroid use; earlier this year, possession of anabolic steroids without a prescription became a federal offense. But the hunger for artificial muscle makers and stamina enhancers may continue to burn.

“I think young people’s appetite for steroids actually increased after Ben Johnson got caught in 1988,” Yesalis says. “They saw that Johnson blew [U.S. sprinter] Carl Lewis away when Johnson was on steroids.” □