

BODYBUILDERS - WHAT KIND OF RISK ARE THESE?



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Consider this: A former World Wrestling Federation champion, well known for his wholesome family image, is found dead in his home. He had strangled his wife and suffocated his 7-year-old son, placed a Bible next to their bodies and then hanged himself, using the pulley of his weight machine.

No motive was found for the killings, which were spread out over an entire weekend.

Investigators searching the house found a cache of anabolic steroids, the performance-enhancement drug of choice for bodybuilders. Did this wrestler become unhinged by these steroids, which can cause paranoia, depression and the explosive outbursts known as “roid rage?”

Consider this as well: A competitive bodybuilder, a former Mr. Northern Ireland and private gym owner, dies in a hospital after complaining of a painful, swollen abscess on his upper right thigh. He had been injecting himself with anabolic steroids purchased over the Internet as far back as 2005. His primary care physician had advised him repeatedly to quit the steroids, which he always intended to do ... after the next competition.

The pathologist who examined his corpse found that his steroid use had caused his heart to increase to twice the average size of an adult male. His liver, spleen and kidneys were all enlarged as well, his main coronary arteries had narrowed, and his liver was showing early signs of cancer. Many of these conditions are linked with anabolic steroid use⁽¹³⁾ and could have caused his death at any time.

What do these two cases mean, in the context of life insurance underwriting? Over the years, as bodybuilding on both the professional and amateur levels

Executive Summary *There are certain professions that expect a person to be extraordinary, no matter what the risk. How does a person reach this goal? Is it even possible to achieve this level of physique? This article is about the use of anabolic steroids with bodybuilding. With the use of the Internet, anabolic steroids are easy to obtain so people are able to acquire the muscle mass that is expected with this sport.*

has grown in popularity, these individuals emerged as an underwriting class. Understanding steroid use among these individuals is increasingly essential.

A Checkered History

Ingestion of male gonads to enhance athletic performance has existed for thousands of years. Indeed, the Olympic athletes of ancient Greece were known to eat (or at least chew) raw animal testicles before competing, and sometimes did so for long time periods before their events⁽⁷⁾.

In the late 19th century, testicular extract was first used as an attempt to restore “vitality” and reverse aging^(1,5). The development of anabolic-androgen steroids (AAS)—synthetic compounds that mimic the effects of the male sex hormone testosterone—began in the early 1900s. Testosterone was first isolated from male urine in the 1920s, and androstenone was first synthesized in 1931. Researchers successfully isolated testosterone in 1935, for which they won the Nobel Prize for Chemistry in 1939^(2,6).

AAS compounds have had many uses since then. Rumors of use to increase aggression in Nazi soldiers are unproven, but they were used just after World War II to help burn victims and to speed healing and strengthening among former concentration camp inmates.

Then, in the late 1940s, amateur and Olympic weightlifters in Soviet-dominated Eastern bloc countries took part in a program of using anabolic steroids to enhance their competitive performance. By 1954, these weightlifters dominated the sport. Dr. John Ziegler, the U.S. team physician, discovered the program, and began to collaborate with chemists at Ciba Pharmaceuticals (where he worked part-time) to develop a synthetic hormone with performance-enhancing properties similar to testosterone, but fewer androgenic side effects (such as excess hair growth and testicular shrinkage)⁽⁷⁾.

In 1956, a team of Ciba organic chemists in Switzerland⁽³⁾ created methandrostenolone, a synthetic androgen replacement hormone⁽⁷⁾. In 1958, the synthetic hormone, dubbed Dianabol, was approved by the U.S. Food and Drug Administration for use with the elderly and burn victims. However, off-label Dianabol soon became the performance-enhancing drug of choice for competitive bodybuilders and weightlifters.

Steroids and Athletes

By the early 1960s, a performance gap was already evident between Dr. Ziegler's weightlifters and other U.S. weightlifters, while the gap between the U.S. and Eastern bloc teams had narrowed⁽⁷⁾. In the 1960s, several flawed studies were conducted, claiming that anabolic steroids were not useful in enhancing athletic performance, but the studies used too low a dose to produce much effect, and controls were insufficient⁽⁷⁾. By 1967, the International Olympic Council (IOC) had banned the use of anabolic steroids, and by the mid-1970s, most major sporting organizations had also banned their use and were implementing drug-testing policies⁽⁶⁾. Although the IOC developed a test for excessive levels of testosterone in 1982, doping methods were advanced, enabling athletes using them to remain undetected for years.

In 1988, the Anti-Drug Abuse Act classified anabolic steroids as "controlled substances," outlawing their use for non-medical purposes⁽⁴⁾. Then in 1990, the Anabolic Steroids Control Act was passed, strengthening the 1988 Act's provisions, and was amended in 2004 to include use of prohormones (hormone precursors). Meanwhile, the East German government's program of systematic anabolic steroid administration and concealment for its athletes, both male and female, was discovered. The resulting scandal reverberated throughout the world of amateur sport, permanently besmirching anabolic steroids' reputation.⁽⁷⁾

Despite these laws and many additional best efforts, worldwide use of anabolic steroids among weight-

lifters and bodybuilders continues, and there are no signs it will stop⁽⁷⁾.

How Steroids Work

Hormones are organic compounds secreted in the endocrine glands and affect particular organs or tissues in the body. Thyroxin, for example, a hormone produced by the thyroid gland, regulates several body functions, and adrenalin, produced by the adrenal glands, regulates certain aspects of metabolism and is responsible for the "fight or flight" response.

Anabolic-androgenic steroids (AAS) are synthetic hormones that act in the body much like testosterone. They increase protein production and reduce muscle recovery time during athletic activity by blocking the effects of the stress steroid hormone cortisol (hydrocortisone) on muscle tissue so that muscle catabolism (breakdown) is reduced. Anabolic steroids can also affect the number of cells that develop into fat storage cells by favoring differentiation into muscle cells⁽⁸⁾.

Anabolic steroids can be administered orally, injected, or absorbed transdermally (through the skin) via skin patches or creams/gels. Pills are the most convenient form, but only about one-sixth of ingested steroid is available in active form⁽⁸⁾. Intramuscular injection is the most effective mode of administration, but its absorption time is more irregular and prolonged. Certain derivative forms of the steroid, such as the propionate, enanthate, undecanoate or cypionate esters, are hydrolyzed to release free testosterone at the injection site⁽⁸⁾.

Once injected, the steroid activates the muscle's androgen receptor and creates a messenger RNA, which then signals ribosomes to construct specific proteins that elicit the anabolic (growth) response⁽⁹⁾.

Anabolic steroids can produce both desirable and undesirable effects. Positive side effects include:

1. Increased muscle mass
2. Increased strength
3. Increased sex drive
4. Increased stamina
5. Stronger sense of well-being
6. Lower levels of body fat
7. Increased energy
8. Increased aggression

Common negative side effects include:

1. High blood pressure
2. Excessive bloating
3. High cholesterol (increase in LDL and decrease in HDL)
4. Acne

5. Hair loss (male pattern balding)
6. Testicular atrophy
7. Gynecomastia (abnormal breast enlargement in men)
8. Deepening of the voice (women)
9. Enlarged clitoris (women)
10. Body hair growth
11. Stunted growth (in children)⁽¹⁰⁾

Other, more serious adverse effects of steroids which can be dependent on the length of use include:

1. Immune system damage
2. Alteration of fasting blood sugar and glucose tolerance tests
3. Increase in the risk of cardiovascular disease or coronary artery disease
4. Liver damage (especially from high doses)
5. Alterations in the structure of the heart (enlargement and thickening of left ventricle)
6. Cardiac arrhythmias
7. Sudden cardiac death
8. Congestive heart failure
9. Heart attacks

Anabolic steroid use by adolescents carries an additional set of risks. Growth can be stunted due to premature fusing of bone growth plates, sexual development can be premature, and erection frequency and duration can increase. In addition, non-medical steroid use by adolescents correlates with poorer attitudes related to health⁽⁹⁾.

Please note that some of these side effects can be seen in non-steroid-using athletes, but steroid use may accelerate the process. Also note that steroids can have a psychiatric effect on the person using them, causing that person to develop the increased levels of aggression and hypomania (low-level mania) that characterize "roid rage."

Steroid (Mis)use

Steroid abuse is typically defined as any non-prescription usage of the drugs. Abuse of anabolic steroids is often accompanied by psychological dependence and a myriad of physically and psychologically harmful side effects.

Performance-enhancing steroids even have their own street names: pumpers, gym candy, Arnolds, stackers, balls and goals, weight trainers⁽¹¹⁾. The oral anabolic steroids are known by their most common trade names or abbreviated versions: Var (Anavar), Drol (anadrol), Dbol (dianabol), Primo (Primobolan), Winny (Winstol), and Halo (Halotestin).⁽¹¹⁾

Although nearly 80% of all steroid users do not participate in competitive sports or body building, bodybuilding is most commonly associated with steroid abuse.

Currently, between 1 million and 3 million people in the U.S. are believed to have misused AAS. Studies in the U.S. show that anabolic steroid misusers tend to be middle-class heterosexual males of median age 25.

Competitive bodybuilders use steroids for increased athletic performance, while noncompetitive bodybuilders and non-athletes use them cosmetically. And users, increasingly, are adolescents: one study found that from 1999 to 2000, steroid use among boys age 12 to 17 jumped by 25%, with 20% of those boys saying they used steroids to enhance their appearance. A second survey of 12th graders found that in the year 2000, 2.5% had used steroids at least once in their lives, and in 2004 that number had risen to 3.4%⁽⁸⁾.

High-risk practices are another aspect of non-medical steroid use. About 13% of anabolic steroid users reported engaging in unsafe injection practices such as reusing needles, sharing needles and sharing multi-dose vials. Needle-sharing, however, accounts for only 1% of the unsafe practices.

A 2007 study found that non-medical anabolic steroid users are, for the most part, well educated: 74% have secondary college degrees, and more had completed college and less had failed to complete high school than is expected from the general population. The same study also found that individuals using anabolic steroids for non-medical purposes had higher employment rates and higher household incomes than the general population. These users tend to research steroids before using them, but generally did so by consulting friends, non-medical handbooks, Internet-based forums, blogs and fitness magazines, which can provide questionable or inaccurate information⁽⁸⁾.

AAS users also do not trust their physicians. A 2004 study in the journal *Addiction* found that 56% of the subjects had not disclosed their anabolic steroid use to their physicians. A second study on attitudes among anabolic steroid users conducted in 2007 found that although 66% of non-medical steroid users were willing to seek medical supervision for their steroid use, 58% lacked trust in their physicians, and 92% felt the medical community's knowledge of non-medical anabolic steroid use was lacking⁽⁹⁾.

The sport of bodybuilding has no drug testing policies which, combined with widespread acceptance of steroid use by its practitioners, makes it a haven for steroid use⁽⁶⁾.

Users commonly "cycle" their steroid use, taking the drug for 8 weeks or more and then stopping for a similar time period. A second common pattern, "stacking," consists of either combining several steroids and taking them together, or using more than one steroid during a cycle. "Tapering" consists of users starting a cycle with a high dose, and gradually decreasing it in order to minimize the many side effects associated with sudden stoppage of steroid use⁽⁶⁾. ("Pyramiding," or starting with a low dose and then gradually increasing it during a cycle, is rarely practiced now.)

Most bodybuilders cycle, taking steroids for 8 weeks and then stopping for 8. If a competition is coming up, they will plan their cycling in time to pass the pre-competition drug test.

Death by Steroids

Steroids are generally used by athletes and other individuals seeking improved performances and enhanced physical appearances. Despite the many health risks associated with steroids, most tend to overlook the risks, instead focusing on the potential rewards.⁽¹²⁾

Although there are no death statistics for competitive bodybuilders, there are statistics for professional wrestlers. Since their competitive activities are similar and their physical appearances are important to the sport as well, members of both professions use anabolic steroids, so expected mortality rates should be similar. Like professional bodybuilding, professional wrestling also does not test for performance-enhancing drugs such as steroids, nor are they banned by wrestling organizations.⁽¹⁴⁾

By 2004, the unusually high rate of death of several comparatively young professional wrestlers had sparked an interest in determining whether a link between anabolic steroid use and premature death could exist.

A 2004 investigative article by *USA Today* found that from 1997 to 2004, an estimated 1,000 wrestlers 45 and younger had participated in the entertainment sport of professional wrestling, and of that number, at least 65 had died. Of these, 25 had heart attacks or other coronary problems—an extraordinarily high rate for people that young—and many had enlarged hearts. In five of those 25 deaths, medical examiners concluded that steroids may have played a role.

RGA's Global Research and Development department recently published a mortality study on latent steroid users, assessing 359 professional wrestlers who had competed in at least one *WrestleMania* between 1985 and 2011.

Although the sample is small, their mortality statistics vs. the general population provide a stark comparison. The mortality rate, according to the report, for this cohort of wrestlers, who are between 30 and 49 years of age, is significantly worse than for their corresponding age groups in the general population. Cardiac issues accounted for 40% of the reported deaths for this cohort.

This contrasts sharply with heart/death ratios for the general population, where cardiac-caused mortality is dropping. In 1990, 38% of deaths among males (29% for females) ages 55-64 were due to heart issues, and 41% for men ages 65-74 (37% for females). In 2007, cardiac issues accounted for only 26% of deaths among males ages 55-64 (18% for women), and 25% for men ages 65-74 (20% for women).

As steroid use is known to cause heart problems, these high heart/death ratios suggest that latent steroid use among professional wrestlers would expose insurers to more heart-related mortality risks.

Are Steroids Necessary?

Anabolic steroids are not going to go away. They have legitimate medical uses in the treatment of certain cancers, HIV and AIDS, menopause/andropause and severe burns, closely monitored by prescribing physicians.

In sports, anabolic steroids are banned substances, but the Internet's black market makes it easy for anyone to obtain them without a prescription.

Ironically, anabolic steroids, strictly speaking, are not absolutely necessary to be a competitive bodybuilder. A good, perhaps even competition-worthy physique can be built using only sound training and nutrition. However, it is impossible for a man to build the huge, awe-inspiring "cut" muscles that judges seek and that win competitions without steroid use.

In competitive bodybuilding, especially on the professional level, the entire purpose is to achieve and display uniquely awe-inspiring physiques, using criteria that render these physiques unobtainable by the average man (or almost any man, for that matter). To achieve such physiques, steroids must be used⁽⁷⁾. The criteria could change for the competitions, but it is doubtful any difference would result, especially at the professional level.

To quote from the website www.steroid.com:

Bodybuilding by its very nature is an unnatural pursuit; our bodies have no desire to change and they absolutely have no desire to pile on massive amounts of muscle. We are creatures of a naturally stagnant nature, and while our natural state will vary from person to person, regardless of who we are, this natural state exists. To change that natural state we must force our bodies to act and perform in an unnatural manner, we must force it to grow and define, but to truly rise above normal, hormonal help must exist. Yes, you can absolutely be a natural bodybuilder and build a good solid physique beyond your natural state; you can achieve this

without the use of anabolic steroids. However, a true freak of nature, a man far beyond average in terms of muscularity will not achieve this without the use of steroids and if he hasn't achieved this there is no competitive sport of great interest. Chris Bell once said that steroids were as American as apple pie; well, for competitive bodybuilding it is the pie and as long as the muscle game is played many people will inevitably want a piece.⁽⁷⁾

Bottom line: using anabolic steroids either without a prescription or in a manner other than how they are prescribed (such as for cosmetic or performance enhancement) is not only illegal, but dangerous as well. Users of steroids who do not admit it to their doctors are risking serious harm to their own health, or even premature death. Even bodybuilders who obtain steroids for performance enhancement from a licensed physician are frequently not medically monitored, and the doses prescribed may exceed normal treatment doses.

Insurers need to use great caution when reviewing these applicants, as many are highly likely to be latent or current users of anabolic steroids. These applicants might test free of anabolic steroids in their medical exams, but as bodybuilders routinely start and stop their usage, if they admit to having used anabolic steroids in the past when preparing for competitions, they will most likely be users again.

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