

**High school baseball players' attitudes, opinions, and knowledge of anabolic steroids: Guidelines for the development of an anabolic steroid intervention program.**

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Several high profile cases have focused media and political attention on anabolic steroid (AS) use. For example, in 1998, Mark McGwire and Sammy Sosa were engaged in a race to eclipse the all-time home run record, when it was revealed that McGwire used a steroid precursor, androstenedione. Then in 2003, the notorious Bay Area Laboratory Co-Operative (BALCO) scandal surfaced. BALCO supplied athletes with performance enhancing drugs, most notably tetrahydrogestrinone (THG), which at the time was an undetectable AS. MLB players, such as Barry Bonds, were called to testify to the grand jury investigation of BALCO. The U.S. government grew increasingly concerned with AS abuse and in 2004 the Anabolic Steroid Control Act was passed. In addition, President Bush spoke on several occasions for the need to eliminate AS from sport. This rhetoric invoked the dangers of AS abuse, both to the game and the human body. Furthermore, the expectation that professional athletes be positive role models for society and the youth of America has been recited. Inevitably, high school sports became part of this discourse. This led to the University Interscholastic League (UIL) to mandate random drug testing of Texas high school students (HSS). The purpose of this study was to examine the effectiveness of random drug testing and to develop guidelines for sport administrators who wish to implement an AS educational program for HSS.

By all accounts the prevalence of AS use among HSS is relatively small. The prevalence of HSS steroid use has remained relatively stable over the last three decades with reports of approximately 2-3% of 12th grade students (most not being athletes) reporting having used AS (Johnston, O'Malley, Bachman, & Schulenberg, 2007). However, of concern is the fact that the perceived risks associated with AS use have steadily declined. The percentage of 12th grade students associating "great risk" with using AS has dropped from a high of 70.7% in 1992 to 57.4% in 2007 (Johnston et al., 2007). Although the perception of harm associated with AS may have declined, the reality is there are many physiological and psychological risks associated with AS, particularly among adolescents (Trenton & Currier, 2005). High schools sports have become increasingly competitive and athletes are under pressure to perform. Athletes at this age are considered to be at risk of becoming AS users. In fact the average age of first AS use among adolescents has been reported to be fifteen years of age (Bahrke, Yesalis, Kopstein, & Stephens, 2000). The concern over adolescent AS use has prompted administrators of high school sports to provide a deterrent to AS use in the form of random drug tests. However, these tests cost between \$80 and \$120 (National Federation of State High School Associations, 2006). Furthermore, the extent to which random drug testing programs are effective or efficient in deterring AS abuse is unclear. For instance, in 2008 the UIL reported 2 positive results out of 10,177 conducted AS tests (UIL, 2008). In effect, the cost required to catch two AS users was in excess of \$600,000 each. Moreover, during the 2007-2008 school year there were 763,967 high school student athletes in Texas (UIL, 2008), which means that only 1.3% of athletes were actually tested (assuming no one was tested twice). In addition, the sports targeted for testing included sports, such as female golf and cross country, that typically are not considered to have a problem with AS abuse. It is therefore unclear whether random drug testing programs are effective and efficient in terms of catching AS users and/or successful in terms of deterring AS use. However, there is evidence to suggest that the inclusion of an AS educational program can effectively deter AS use. Goldberg and colleagues (2000) reported that HSS who participated in an AS educational programs reported significantly lower ( $p < .05$ ) intentions to use and actual use of AS when compared to HSS that did not receive the educational program. To develop guidelines for the design of an AS educational program eight focus groups were conducted. The goal of these focus groups was to develop an understanding of the attitudes, opinions and knowledge of potential recipients of an AS education program. The participants were elite high school baseball players recruited from an athletic camp at a large southwestern university. The camp was specifically designed for elite caliber high school athletes who were all likely Division I collegiate prospects and would likely be offered scholarships. Permission was obtained from the athletes and coaches to conduct the focus group with these athletes.

Participants were males aged between 12-18 years of age. Each focus group contained between 8-12 student athletes. Participants were informed of the purpose of the focus group and were encouraged to voice their opinion. The focus groups used a semi-structured format to allow for the development of ideas and suggestions. Several questions relating to perceptions of AS use, knowledge of AS, information sources for AS, and information sought on AS was obtained from each group. Each focus group lasted approximately 45 minutes. The participants' perceptions of AS use were dramatically different from reality. Typically, participants believed that approximately 30-40% of high school football players, 15-20% of high school baseball players, and virtually 0% of high school basketball players used AS. This contrasts with reported aggregate levels of approximately 2% among HSS (most being non-athletes). Interestingly, participants believed that AS use among college athletes was virtually nonexistent, whereas at the professional level it was estimated that 80-90% of athletes used AS. Participants were reasonably knowledgeable about AS, knew of multiple source to obtain information on AS, and knew where to obtain AS.

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Current educational classes on AS were described as ineffective and not educational. A primary reason for using AS was the pressure to succeed, to maintain their starting position, and to be noticed by college scouts. The last major theme that was revealed from the focus groups was that HSS did not appear to have considered the way in which they might be offered steroids. In particular student-athletes did not realize that an authority figure (such as a coach or adult) might induce them to take AS. The main coping strategy participants considered for this scenario revolved around a "just say no" response. Student-athletes agreed that this would be a difficult position to be in, but, they had difficulty expressing the way in which they would deal this event should it happen. Based on the results from the focus groups several guidelines were developed for the design of educational programs. First, any program needs to provide accurate information, including both the positive and negative effects of steroids. HSS are already knowledgeable about AS, are inquisitive, and want clarification on AS. Second, HSS have to be provided with alternatives to AS (e.g., nutrition, training protocols). These are athletes who are motivated and want to be successful. It is insufficient to present a "Just say no" message. Third, HSS need to be provided with coping strategies for dealing with people who offer them AS. Activities, such as role-play scenarios may be an effective way to prepare HSS for the possibility of being offered AS.