

CSA REPORT 9 (A-03) - Hormone Abuse by Adolescents
Summary

Objectives: To consolidate scientific data on adolescent hormone abuse, particularly anabolic steroids, including prevalence and behavioral correlates of use, performance-enhancing effects, adverse effects, and interventions that have been used in an attempt to reduce hormone abuse. Recent data relevant to the use of dietary supplements that possess intrinsic androgenic/anabolic activity or that serve as precursors to more potent anabolic steroids or their active metabolites also are reviewed. Barriers and challenges to the design and implementation of an effective nationwide intervention strategy also are discussed.

Methods: Literature searches were conducted in the MEDLINE and Nexis databases for English-language articles published between 1975 and February 2003 using the search terms “adolescent/adolescence” or “student” or “athlete” in combination with “anabolic,” “steroid,” “dietary supplements,” “erythropoietin,” or “growth hormone,” and “prevalence,” “epidemiology,” “adverse effects,” “doping in sports” or “substance abuse detection.” A total of 1163 citations were identified and 503 were retrieved for analysis. Additional references were culled from the bibliographies of these references.

Results: Survey data indicate that middle and high school students have been using anabolic steroids since the mid-1970s. National surveys conducted since 1991 indicate that use is increasing in high school students, particularly among females, among whom it may be considered a subset of disordered eating habits and physique-altering drug abuse. Use is highest among athletes and clusters with the abuse of other drugs. Short-term use of low to moderate doses of compounds classified as anabolic steroids increase muscle strength in previously trained athletes; studies analyzing higher dose regimens typically used for performance enhancement have not been conducted. The anabolic steroid precursors androstenedione and dehydroepiandrosterone (DHEA) have not been demonstrated to significantly increase serum testosterone in males or to improve strength; many other precursors are available that have not been adequately evaluated in the peer-reviewed literature. Androstenedione does significantly increase serum testosterone concentrations in women. Erythropoietin clearly enhances aerobic performance; data are lacking on the effect of human growth hormone on strength or performance in normal adolescents or athletes.

Conclusions: Illicit anabolic steroid use is on the rise in adolescents, and effective interventions are needed. Drug testing is legal, but too expensive for widespread application. Structured, gender-specific, multidimensional educational interventions used in the athletic team setting have been effective in reducing anabolic steroid use and improving decision-making. A successful nationwide approach will require focused educational efforts tailored to the school community in conjunction with further research on key variables, and possibly requiring legislative and/or regulatory approaches to limit availability of anabolic steroid precursors that are currently freely available over the counter as dietary supplements.