

Excellence in Prevention – descriptions of the programs and strategies with the greatest evidence of success

Name of Program/Strategy: ATLAS (Athletes Training and Learning To Avoid Steroids)

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1. Overview and description

Athletes Training and Learning To Avoid Steroids (ATLAS) is a school-based drug prevention program. ATLAS was designed for male high school athletes to deter drug use and promote healthy nutrition and exercise as alternatives to drugs. The curriculum consists of 10 45- minute interactive classroom sessions and 3 exercise training sessions facilitated by peer educators, coaches, and strength trainers. Program content includes (1) discussion of sports nutrition; (2) exercise alternatives to anabolic steroids and sports supplements; and (3) the effects of substance abuse in sports, drug refusal role-playing, and the creation of health promotion messages.

2. Implementation considerations (if available)

3. Descriptive Information

Areas of Interest	Substance abuse prevention
Outcomes	1: Intent to use anabolic steroids

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	2: Anabolic steroid use 3: Alcohol and other illicit drug use
Outcome Categories	Alcohol Drugs
Ages	13-17 (Adolescent)
Genders	Male
Races/Ethnicities	American Indian or Alaska Native Asian Black or African American Hispanic or Latino White Race/ethnicity unspecified
Settings	School
Geographic Locations	Urban Suburban Rural and/or frontier
Implementation History	ATLAS has been implemented in more than 275 sites in 43 States, Washington, DC, and Puerto Rico and has reached approximately 35,000 students.
NIH Funding/CER Studies	Partially/fully funded by National Institutes of Health: Yes Evaluated in comparative effectiveness research studies: Yes
Adaptations	ATLAS materials have been translated into Spanish.
Adverse Effects	No adverse effects, concerns, or unintended consequences were identified by the applicant.
IOM Prevention Categories	Selective

4. Outcomes

Outcome 1: Intent to use anabolic steroids

Description of Measures	Intent to use anabolic steroids was measured by a self-report instrument using primarily 5- to 7-point agreement scales.
Key Findings	Athletes participating in ATLAS were compared with athletes who were given commercially produced materials that emphasized the adverse effects of anabolic steroids and the benefits of a sports nutrition diet. Athletes in the ATLAS group were less likely than those in the comparison group to say they

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	intended to use anabolic steroids, both at the end of the football season ($p < .05$) and at 1-year follow-up ($p < .03$).
Studies Measuring Outcome	Study 1
Study Designs	Experimental
Quality of Research Rating	2.9 (0.0-4.0 scale)

Outcome 2: Normative Anabolic steroid use

Description of Measures	Anabolic steroid use was measured by a self-report instrument primarily using 5- to 7-point agreement scales.
Key Findings	Athletes participating in ATLAS were compared with athletes who were given commercially produced materials that emphasized the adverse effects of anabolic steroids and the benefits of a sports nutrition diet. At the end of the football season, 7 new anabolic steroid users were reported in the ATLAS group, while 18 were reported in the comparison group ($p < .04$).
Studies Measuring Outcome	Study 1
Study Designs	Experimental
Quality of Research Rating	2.9 (0.0-4.0 scale)

Outcome 3: Alcohol and other illicit drug use

Description of Measures	Alcohol and other illicit drug use (marijuana, amphetamines, and narcotics) were measured by a self- report instrument primarily using 5- to 7-point agreement scales.
Key Findings	Athletes participating in ATLAS were compared with athletes who were given commercially produced materials that emphasized the adverse effects of anabolic steroids and the benefits of a sports nutrition diet. Compared with athletes in the comparison group, athletes in the ATLAS group typically reported lower use of alcohol and illicit drugs, both at the end of the football season ($p = .009$) and at 1-year follow-up ($p < .04$).
Studies Measuring Outcome	Study 1
Study Designs	Experimental
Quality of Research Rating	3.0 (0.0-4.0 scale)

5. **Cost effectiveness report** (Washington State Institute of Public Policy – if available)
6. **Washington State results** (from Performance Based Prevention System (PBPS) – if available)

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7. Where is this program/strategy being used (if available)?

Washington Counties	Oregon Counties

8. Study Populations

The studies reviewed for this intervention included the following populations, as reported by the study authors.

Study	Age	Gender	Race/Ethnicity
Study 1	13-17 (Adolescent)	100% Male	79% White 3.7% Asian 5.4% Black or African American 3.7% Hispanic or Latino 7.4% Race/ethnicity unspecified 0.8% American Indian or Alaska Native

9. Quality of Research

The documents below were reviewed for Quality of Research. Other materials may be available. For more information, contact the developer(s).

Study 1

Goldberg, L., MacKinnon, D. P., Elliot, D. L., Moe, E. L., Clarke, G., & Cheong, J. (2000). The Adolescents Training and Learning to Avoid Steroids Program: Preventing drug use and promoting health behaviors. *Archives of Pediatrics and Adolescent Medicine*, 154, 332-338.

Supplementary Materials

Athlete Pack, including sports menu, training guide, and 10-session curriculum workbook

Coach/Instructor Package, including background information, squad leader guide, 10-session curriculum guide, and overheads

Fidelity Rating Form

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Fritz, M. S., MacKinnon, D. P., Williams, J., Goldberg, L., Moe, E. L., & Elliot, D. L. (2005). Analysis of baseline by treatment interactions in a drug prevention and health promotion program for high school male athletes. *Addictive Behaviors*, 30, 1001-1005.

Goldberg, L., Elliot, D., Clarke, G. N., MacKinnon, D. P., Moe, E., Zoref, L., et al. (1996). Effects of a multidimensional anabolic steroid prevention intervention. The Adolescents Training and Learning to Avoid Steroids (ATLAS) Program. *Journal of the American Medical Association*, 276(19), 1555-1562.

Goldberg, L., Elliot, D. L., Clarke, G. N., MacKinnon, D. P., Zoref, L., Moe, E., et al. (1996). The Adolescents Training and Learning to Avoid Steroids (ATLAS) prevention program. Background and results of a model intervention. *Archives of Pediatrics and Adolescent Medicine*, 150, 713-721.

MacKinnon, D. P., Goldberg, L., Clarke, G. N., Elliot, D. L., Cheong, J., Lapin, A., et al. (2001). Mediating mechanisms in a program to reduce intentions to use anabolic steroids and improve exercise self-efficacy and dietary behavior. *Prevention Science*, 2(1), 15-28.

Quality of Research Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the Quality of Research for an intervention's reported results using six criteria:

1. Reliability of measures
2. Validity of measures
3. Intervention fidelity
4. Missing data and attrition
5. Potential confounding variables
6. Appropriateness of analysis

For more information about these criteria and the meaning of the ratings, see Quality of Research.

Outcome	Reliability of Measures	Validity of Measures	Fidelity	Missing Data/Attrition	Confounding Variables	Data Analysis	Overall Rating
1: Intent to use anabolic steroids	2.7	2.5	3.3	3.0	2.6	3.2	2.9
2: Anabolic steroid use	3.0	3.0	3.3	3.0	2.0	3.2	2.9
3: Alcohol and other illicit drug use	3.0	3.2	3.3	3.0	2.6	3.2	3.0

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Study Strengths

The psychometric properties of the alcohol and drug use outcome measures, which were based on the Monitoring the Future survey, have been established by independent investigators. Intervention fidelity is clearly a strength of ATLAS. The investigators endeavored to assure fidelity by providing highly scripted materials and observing classroom sessions to confirm coach and peer-leader adherence to the protocol. Attrition among students was not unreasonably high given the relatively high student turnover (78.9% from preseason to postseason). Follow-up rates were impressive (68.7% for cohorts 1 and 2 at 1-year follow-up). There was no attrition among schools. Everyone who completed the program appears to have provided complete data. The longitudinal evaluation used a quasi-experimental design in which the schools were matched in dyads based on salient demographics, including school size, family socioeconomics, and the football team's prior win-loss record. The convergence of findings across studies and cohorts strongly supports the conclusion that ATLAS led to positive changes in participants' intentions to use anabolic steroids and reductions in their use of anabolic steroids, alcohol, and drugs. There was some evidence that the analyses may be appropriate to support outcomes seen in the short-term and 1-year follow-ups.

Study Weaknesses

More details could have been presented on questionnaire development and psychometric properties regarding anabolic steroid use. Because research staff could identify respondents through codes, students may have responded to the survey based on their awareness of what the experimenter expected to find. The authors noted that "some students who used or were considering using anabolic steroids may have been reluctant to enroll. Alternatively, these students may have enrolled in the study but not admitted to drug use." The methods used to analyze the effects of attrition, and most especially the effects of differential attrition, are unclear.

One potential threat to internal validity was the significant baseline differences between the experimental and control groups. There were concerns about the selection of one-tailed rather than two-tailed significance tests, regardless of how promising the pilot data were, and the absence of alpha correction, given the number of separate regressions.

10. Readiness for Dissemination

The documents below were reviewed for Readiness for Dissemination. Other materials may be available. For more information, contact the developer(s).

Dissemination Materials

ATLAS CD-ROMs (training and implementation) ATLAS informational DVD

ATLAS program Web site, <http://www.atlasprogram.com>

Goldberg, L., Elliot, D., & Center for Health Promotion Research. (n.d.). The ATLAS program athlete's guide. Portland, OR.

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Goldberg, L., Elliot, D., & Center for Health Promotion Research. (n.d.). The ATLAS program coach manual. Portland, OR.

Goldberg, L., Elliot, D., & Center for Health Promotion Research. (n.d.). The ATLAS program squad leader manual. Portland, OR.

Goldberg, L., Elliot, D., & Center for Health Promotion Research. (n.d.). The ATLAS program team workbook. Portland, OR.

Readiness for Dissemination Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the intervention's Readiness for Dissemination using three criteria:

1. Availability of implementation materials
2. Availability of training and support resources
3. Availability of quality assurance procedures

For more information about these criteria and the meaning of the ratings, see Readiness for Dissemination.

Implementation Materials	Training and Support Resources	Quality Assurance Procedures	Overall Rating
3.8	3.3	3.0	3.3

Dissemination Strengths

Implementation materials include everything a coach might need to put this program into practice, with supplemental materials for teams and athletes that reinforce lessons. Training materials are well organized. Pre- and post-intervention tests are included to assess both coaches' and athletes' knowledge gain.

Dissemination Weaknesses

No guidance is provided for interpreting pre/post-intervention test data. The materials provide an implementation checklist but do not specify what tools should be used to monitor fidelity.

11. Costs

The information below was provided by the developer and may have changed since the time of review. For detailed information on implementation costs (e.g., staffing, space, equipment, materials shipping and handling), contact the developer.

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Item Description	Cost	Required by Program Developer
Coach/Instructor Package (includes Leader Training videos)	\$280 each	Yes
Squad Leader Package	\$11 each	Yes
Athlete Package	\$11 each	Yes
Coach/Instructor Training	Varies depending on site needs	No

12. Contacts

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