European Monitoring Centre
for Drugs and Drug Addiction

ISSN 2315-1463

EMCDDA PAPERS

Drug testing in schools

Content: Background (p. 2) | Methods (p. 3) | Results (p. 3) | Conclusions (p. 6) | References (p. 13) | Appendix (p. 15) | Acknowledgements (p. 17)

Abstract: Although rare, drug testing in schools continues to be practised in some European countries. In many cases, drug testing is intended to act as a deterrent to substance use. Nevertheless, studies conducted in the United States show that the drug testing of students can have iatrogenic effects, sometimes being associated with an increase in illicit drug use or an increase in the risks associated with substance use.

To evaluate the effectiveness of random testing in schools, we conducted a systematic review of seven studies that met certain inclusion criteria. These studies were all conducted in the United States among college students between 13 and 19 years of age and in one case among athletes. Although different with regard to study design and the type of testing offered, all of the studies show that testing has little or no effect on drug use. In addition, the invasiveness of the testing procedure and limitations to the information derived from drug testing affect its utility as a prevention approach. In light of this, experts have called for further evidence-based studies to help guide best practice for drug prevention interventions with adolescents.

Keywords drug testing school students early detection

Recommended citation: European Monitoring Centre for Drugs and Drug Addiction (2017), *Drug testing in schools*, EMCDDA Papers, Publications Office of the European Union, Luxembourg.

Background

A wide range of prevention interventions are implemented in school settings in Europe, and it is recommended that the selection of appropriate approaches is based on the best available scientific evidence. Some particular concerns exist about the use of prevention approaches based on deterrence, such as testing pupils for drugs, which continues to be used in a limited number of European countries despite the fact that the empirical evidence as to whether or not the drug testing of pupils does in fact affect young people's drug use behaviour has not been systematically scrutinised. This paper explores the use of random drug testing in schools, reviews the research to date and looks at the implications for the future use of this intervention type.

For decades, drug testing has been carried out for substance-use screening and treatment purposes in military, workplace, clinical and criminal justice settings. However, testing pupils for drugs as a screening method is rare, at least in Europe. According to expert opinions from EU Member States and Norway, reported to the EMCDDA in 2016, it is not carried out at all, or is even forbidden, in 19 countries. Another 10 ([1]) countries reported that this intervention is carried out, but only rarely. In these countries, testing pupils is legally possible, but not recommended. In some instances, its use is limited to individual cases when it is deemed necessary and reasonable (Czech Republic, Finland), and, in some cases, the young person's consent and the consent of their parent or guardian are necessary (Ireland, Slovakia Sweden). In Slovakian vocational schools, drug testing can be carried out to safeguard workplace safety.

In other parts of the world, drug testing in schools is more common. In the United States, since the late 1980s, large-scale drug and alcohol testing (DAT) has been carried out in many segments of the US civilian workplace. Since 2003, the US Department of Education's Office of Safe and Drug-Free Schools (OSDFS) has operated a grant programme to support mandatory-random student drug testing (MRSDT) programmes in schools. Under MRSDT programmes, students and their parents sign consent forms agreeing to the students' random drug testing as a condition of participation in athletics and other school-sponsored competitive extracurricular activities (Goldberg et al., 2003; James-Burdumy et al., 2012). In Russia, in 2013, a new law was introduced instigating drug testing for school students. The testing is held in two stages. During the first, socio-psychological, stage, students complete a questionnaire. The second stage consists of medical tests and examinations of students to identify whether or not there are any traces of narcotic substances. The test is conducted on a voluntary basis (RT.com, 2013).

School-based random student drug testing (RSDT), in which, using a variety of randomisation procedures, students are assigned for testing or not, is a controversial drug-use prevention tool. In many countries, this has been an issue of public or political debate. The consent of students and their parents has been required in all cases. Most psychoactive substances commonly used by teenagers can be detected in urine. Inhalants, which typically undergo rapid respiratory elimination, are an important exception.

Proponents argue that school-based drug testing reduces student substance use by providing students with a reason to avoid drug use, that is, the potential negative consequences associated with a positive test result, and that it also identifies adolescents with substance use disorders, who can then be referred for treatment.

Opponents of drug testing argue that it is not appropriate from a human rights perspective and also that it is not an effective method of prevention (DuPont et al., 2013). The ethical considerations voiced against drug testing include the fact that that it is seen to undermine children's rights. In addition, the concern was put forward that testing compromises trust and can interfere with confidence between schools and students. Other concerns regarding school-based drug testing include the potential for breaches of privacy (e.g. when a student's prescribed medications are identified on a drug test); detrimental consequences, such as the suspension or expulsion of students who have positive drug test results; increased school dropout or truancy among students who fear that they would fail a drug test; and an increased use of substances not easily detectable in a drug screen (Levy and Schizer, 2015). Student organisations have protested against drug testing in Lithuania, Austria and Finland, and student support staff, e.g. school doctors in Belgium and youth solicitors in Austria, have also objected to its use.

Why this review?

Although any reduction in student drug use is beneficial, it is unclear whether or not school-based drug testing is effective, and whether or not it is a good use of limited school resources. To date, there is no systematic review that summarises empirical evidence to support or refute the efficacy of RSDT in schools.

Objectives

To review and summarise the existing evidence on the effectiveness of RSDT programmes in preventing alcohol and drug misuse in young adults.

([1]) Belgium, Croatia, Czech Republic, Hungary, Ireland, Italy, Netherlands, Norway, Sweden, United Kingdom.

Methods

We searched and reviewed all the studies available with the inclusion criteria described below.

Types of studies

Randomised controlled trials (RCTs) (individual or cluster design) and controlled prospective studies (CPSs) reporting the evaluation of an RSDT programme versus a control condition (no intervention or other preventive intervention to prevent substance use among young people) were included. The results from the RCTs and the CPSs are summarised separately.

Types of participants

Students (13–19 years old).

Types of interventions

Experimental intervention: RSTD.

Control intervention: no intervention; any other preventive intervention.

Types of outcome measures

Primary outcome

1. A reduction in the incidence and prevalence of alcohol and other drug use among young people.

Secondary outcomes

1. Intention to use substances.
2. Perceived consequences of substance use.
3. Number of reported disciplinary incidents in schools.

Search methods for the identification of studies

Electronic searches: all searches included non-English language literature.

We searched the following databases:

- Cochrane Drugs and Alcohol Group's Specialised Register of Trials (18 October 2015);
- The Cochrane Central Register of Controlled Trials (CENTRAL, issue 10, 2015);
- MEDLINE (PubMed) (January 1966 to February 2017);
- EMBASE (embase.com) (January 1974 to 18 October 2015);
- ERIC (eric.ed.gov) (January 1988 to 18 October 2015);
- Web of Science (Thomson Reuters) (January 1995 to 18 October 2015).
- Details of the searches are listed in the Appendix.

We also searched for ongoing clinical trials and unpublished trials via internet searches on the following sites:

- ClinicalTrials.gov (www.clinicaltrials.gov);
- World Health Organization (WHO) International Clinical Trials Registry Platform (ICTRP) (apps.who.int/trialsearch/).

Data collection and analysis

Selection of studies

Two authors independently screened the titles and abstracts of the studies obtained using this search strategy. Each potentially relevant study identified in the search was obtained as the full-text version and assessed for inclusion independently by the two authors.

Data extraction and management

Two authors extracted data independently. Any disagreement was discussed and solved by consensus.

Results

The search retrieved 921 records and after removing duplicates, 700 were considered for inclusion. Of these, 684 were excluded on the basis of the title and abstract, and 16 titles were retrieved as full-text versions for closer inspection. Of these, nine papers were excluded and seven were included. The process of study identification and the results are outlined as a flow diagram in Figure 1, in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) statement (Moher et al., 2009).

Characteristics of excluded studies

Nine references were excluded after reading the full text; the reasons for exclusion are described in detail in Table A1 'Characteristics of the excluded studies' in the Appendix.

Characteristics of included studies

Seven papers satisfied the criteria for inclusion: three prospective randomised studies (Goldberg et al., 2003, 2007; James-Burdumy et al., 2012), two quasi-experimental studies (Barrington, 2007, 2008); one descriptive analyses (Terry-McElrath et al., 2013); and one report (Yamaguchi et al., 2003).

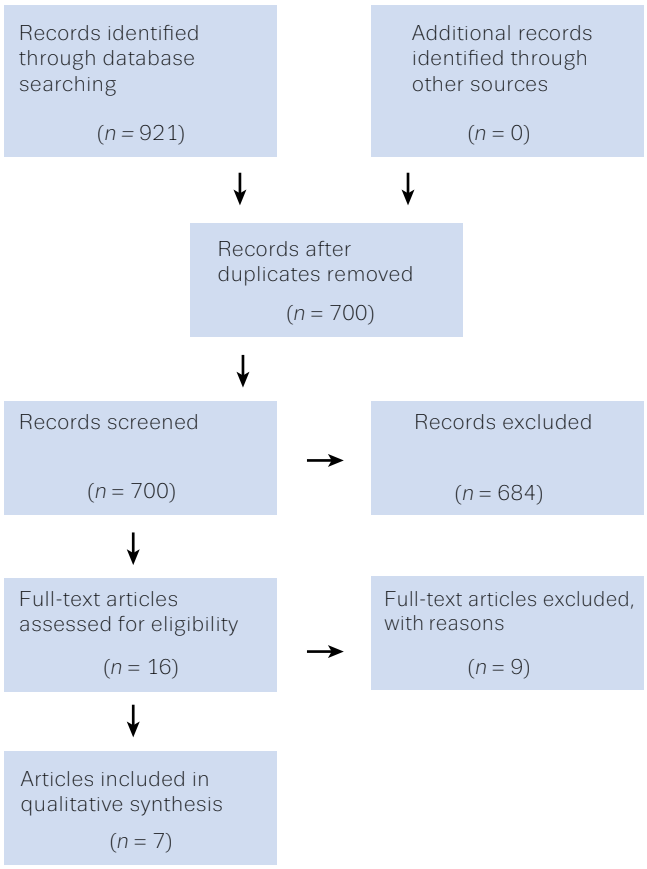
All the papers refer to studies conducted in the United States. The RCTs are of good quality, based on the criteria developed by the Cochrane Collaboration for the assessment of the risk of bias in RCTs (Higgins and Green, 2011). It was impossible to assess the methodological quality of the remaining studies, on account of the types of study design.

Summary of the main results

The major limitation of the present analysis was the variation in the study designs and measures, which made it difficult to conduct a meta-analysis of primary studies. Heterogeneity in the measurement of outcomes and variations in the quality of reporting, for instance some studies included only statistical analysis and *p*-values without an indication of the absolute numbers of participants, prevented pooled estimates. The conclusions of this paper are therefore based on a narrative synthesis of individual studies and results.

FIGURE 1

PRISMA flow diagram



Barrington, 2007 and 2008

Both Barrington references relate to a quasi-experimental study evaluating the effect of voluntary, randomised student drug testing (VRSDT) programmes on 1 048 students (in grades 6–12, aged 11–17) from two rural, low-income, public secondary school districts: 245 from the intervention district and 803 from the comparison district.

The results show that there was no statistically significant evidence to suggest that the VRSDT intervention had an effect on alcohol, tobacco and illicit drug use. The authors concluded that, despite the interest and the increased federal funding for such testing, there is very little empirical evidence to suggest that VRSDT is effective at reducing illicit drug use among school students.

Goldberg et al., 2003

SATURN (Student Athlete Testing Using Random Notification) is a prospective randomised study including two high schools, one with mandatory drug testing with consent before sports' participation and one, the control school, without drug testing. Students from both schools were assessed during the 1999–2000 school year. Athletes and non-athletes in each school completed confidential or anonymous questionnaires developed for this study, respectively, at the beginning and end of the school year. The results show that the past 30-day index of illicit drug and athletic-enhancing substance use was lower ($p < 0.05$) among drug tested athletes at follow-up, with no statistically significant difference in alcohol use. However, most drug-use risk factors, including norms of use, belief in lower risk of harm from drugs and poorer attitudes towards the school, were higher among the athletes in the drug testing school ($p < 0.05$) than among athletes in the control school. Furthermore, although there was a reduction in the illicit drug use index among non-athletes at the drug testing school at the end of the school year, it was not statistically significant ($p < 0.10$).

Goldberg et al., 2007

A second SATURN prospective randomised controlled study was conducted of a single cohort of students attending five

high schools with a DAT policy (intervention schools) and six high schools with a deferred policy (control schools). The students were assessed by voluntary, confidential questionnaires. Surveys were administered over five separate periods: during the beginning (autumn) and the end (spring) of the 2000–2001 and 2001–2002 school years, and during the autumn of the 2002–2003 school year. Student-athletes from intervention and control schools did not differ in past one-month use of illicit drugs or a combination of drugs and alcohol by any of the four follow-up periods. At the end of the initial school year and after two full school years, student-athletes at intervention schools reported less drug use during the past year ($p < 0.01$) than student-athletes at the control schools. With regard to the combination of past-year drug and alcohol use, student-athletes at intervention schools reported less use at the second and third follow-up assessments ($p < 0.05$) than student-athletes at control schools.

James-Burdumy et al., 2012

This study consisted of a cluster RCT and included 36 high schools and 10 980 students in grades 9–12. Half of the schools were randomly assigned to a treatment group that was permitted to implement MRSDT immediately and the remaining half were assigned to a control group that delayed MRSDT until after follow-up data collection one year later, in spring 2008. Students subject to MRSDT reported less substance use than comparable students in high schools without MRSDT. In particular, participants in treatment schools were significantly less likely than comparable students in control schools, without MRSDT, to report any past 30-day use of substances covered by their district's MRSDT policy (effect size = –0.21). Rates of self-reported substance use were also lower among participants in treatment schools than among those in control schools on the other five substance use measures, although these differences were not statistically significant after accounting for multiple hypotheses testing. Past 30-day marijuana use frequency was assessed on a 7-point scale.

Terry-McElrath et al., 2013

This paper reported on a descriptive analysis using questionnaire data from the Monitoring the Future study, collected from 1998 to 2011. Students participating in the survey consisted of those in grades 8, 10 and 12 who attended a public or private school from a nationally representative sample. Students were asked about past 30-day frequency of marijuana use and about their use of lysergic acid diethylamide (LSD), other psychedelics, cocaine, heroin, amphetamines and tranquilisers. For those in 12th grade, two additional substances were included: sedatives/barbiturates and narcotics other than heroin. A mean was taken from these items to create a scale of the frequency of use of illicit drugs other than marijuana (OTM).

The frequency of marijuana use in middle school student-athletes was significantly lower in schools with either any athlete student drug testing (SDT) or random athlete SDT. Among middle school students participating in non-athletic extracurricular activities, random testing aimed at that group was associated with a significantly higher prevalence of OTM drug use.

Marijuana use frequency and prevalence were significantly lower among high school student-athletes in schools with either any athlete SDT or random athlete SDT than among students in schools with no SDT. Among high school students participating in non-athletic extracurricular activities, marijuana use prevalence reduction was significantly associated with any SDT and any random SDT aimed at this group. In contrast, OTM drug use frequency was significantly associated with any SDT testing targeting such students.

In addition, among high school students attending schools with either drug testing for a particular cause (for-cause SDT) or any random SDT, both perceived risk and the number of students reporting that they disapprove of using marijuana regularly were higher with higher levels of for-cause and random SDT.

Yamaguchi et al., 2003

This report summarised the findings from two sets of analyses of data from the Monitoring the Future study conducted to examine the association between drug testing in schools and reported drug use by students in the 8th, 10th and 12th grades. For marijuana use among students in grades 8, 10 and 12, drug testing (of any kind) was not a significant predictor of student marijuana use in the 12 months prior to the survey, and neither was drug testing for cause or suspicion. These results were consistent for all samples, even after controlling for student demographic characteristics. Similar to results for marijuana use, drug testing of any kind and drug testing for cause and suspicion were not significant predictors of the use of other illicit drugs among students in grades 8, 10 and 12. Even after controlling for student demographic characteristics, drug testing was not a significant predictor of other illicit drug use in any of the samples.

Table 1 gives an overview of the papers and reports identified for this review, describing the objectives, results and conclusions of the authors in more detail.

Conclusions

The findings from this review indicate that there is little scientific evidence to support the use of randomised drug testing for reducing drug use among those tested and among their school peers.

Based on the inconsistent results of the reviewed studies, it is not clear whether or not drug testing in schools has any significant impact on students' self-reported rates of illicit drug use. Among the 8th-, 10th- and 12th-grade students surveyed, school drug testing was not associated with either the prevalence or the frequency of marijuana use or of other illicit drug use. Only one study showed that moderately lower marijuana use was associated with any random testing of the general high school student population and among students specifically subject to testing (athletes or participants in non-athletic extracurricular activities). However, SDT was generally associated with increased use of illicit drugs OTM and the study's authors recommended that, until further research can clarify the conflicting outcomes, schools should approach drug testing with caution. A further limitation of these results is that all the reviewed studies were conducted in the United States, and the results are therefore not directly transferable to a European context.

The invasiveness of the procedure and limitations of the information derived from drug testing also affect its utility as a prevention approach. Drug testing is only a tool used to identify who has been using drugs during the period prior to testing. Where it is used, the most important issue to consider is the procedures used to follow up on the results and effectively help, not punish, students who test positive for drug use. The research literature indicates that positive tests need to be followed up by further assessments and by providing students with or referring them to counselling, for treatment or to other healthcare and psychosocial services.

In conclusion, there is a clear need for further evidence-based studies to guide best practices to support successful prevention interventions with adolescents. Microtrials and RCTs need to be conducted to explore the evidence for a wide range of prevention interventions, in varied school populations and in cross-national studies using common research designs and measures.

TABLE 1
Overview of included reports

Author (year)	**Barrington (2007 and 2008)**
Objective	To measure students' drug use prior to and after drug testing programme implementation.
Study design	Quasi-experimental data from a survey administered in 2005, 2006 and 2007.
Participants	1 048 students (in grades 6–12) participating in US school-sponsored extracurricular activities in two rural, low-income, public secondary school districts; 245 (23.4 %) students from the intervention district and 803 (76.6 %) students from the comparison district.
Outcomes	Alcohol, tobacco and illicit drug use.
Results	Alcohol use: results showed a distinct decreasing trend in the comparison district and a slight increasing trend in the intervention district. However, the interaction between year and district was not statistically significant ($p = 0.16$) and, thus, the null hypothesis was not rejected and it was concluded that there was no evidence to suggest that the change in alcohol use over the three-year period was different for the two districts. Tobacco use: results showed little evidence that tobacco use over time was different for the two districts. The interaction between year and district was not statistically significant ($p = 0.79$) and, thus, the null hypothesis was not rejected and it was concluded that there was no evidence to suggest that the change in tobacco use over the three-year period was different for the two districts. Illicit drug use (marijuana and cocaine): results showed a distinct decreasing trend in the comparison district and a less apparent downwards trend in the intervention district. However, the interaction between year and district was not statistically significant ($p = 0.20$) and, thus, the null hypothesis was not rejected and it was concluded that there was no evidence to suggest that the change in illicit drug use over the three-year period was different for the two districts.
Conclusions of the authors	The quantitative findings of this quasi-experimental study revealed that VRSDT had no significant impact on students' self-reported rates of illicit drug use.
Author (year)	**Goldberg et al. (2003)**
Objective	To assess the deterrent effect of mandatory, random drug testing among high school athletes in a controlled setting.
Study design	Longitudinal survey SATURN: data from a survey. Two US high schools — one with mandatory drug testing with consent before sports' participation, and a control school without drug testing — were assessed during the 1999–2000 school year.
Participants	276 adolescent athletes (135 experimental and 141 control) were enrolled in the study and assessed at baseline. Of student athletes assessed pre-season, 57 % ($n = 159$; 97 experimental and 62 control; $p = 0.05$) were assessed at the end of the school year. Furthermore, 507 non-athletes were assessed by questionnaire; 338 at baseline (170 control and 168 experimental) and 226 at the end of the school year (117 control and 109 experimental).

TABLE 1 (continued)

Outcomes	Substance use: alcohol, illicit drugs, ergogenic substances and 'athletic' supplements, assessed at baseline and at the end of the school year. The illicit drug index included measures of marijuana, cocaine in any form, amphetamines/methamphetamines, narcotics, phencyclidine (PCP) and inhalants. The ergogenic substance index included athletic-enhancing drugs comprising anabolic androgenic steroids, amphetamines and methamphetamines, plus pseudoephedrine, other over-the-counter stimulants, anabolic steroid precursors, androstenedione and creatine. An additional index included the ergogenic drugs without athletic supplements.
Results	Athletes drug use proportions and attitude construct means (and standard deviations) for the experimental and control groups before and after the drug testing intervention.

	Control		Treatment		Group* time interaction β (SE)
	Pretest mean (SD)	Posttest mean (SD)	Pretest mean (SD)	Posttest mean (SD)	
New lifetime drug use (use at the posttest by students who had not used at the pretest)					
Any drugs	0.000	0.364 (0.481)	0.000	0.400 (0.490)	0.546 (1.071)
Alcohol	0.000	0.313 (0.464)	0.000	0.478 (0.500)	0.671 (0.703)
Tobacco	0.000	0.167 (0.373)	0.000	0.233 (0.423)	0.395 (0.659)
Illicit drugs	0.000	0.128 (0.334)	0.000	0.327 (0.469)	1.029 (0.579)**
Ergogenic drugs	0.000	0.096 (0.295)	0.000	0.107 (0.309)	0.195 (0.599)
Ergogenic substances	0.000	0.118 (0.323)	0.000	0.129 (0.335)	0.219 (0.653)
Past 30-day drug use					
Any drugs	0.339 (0.473)	0.417 (0.493)	0.333 (0.471)	0.309 (0.462)	−0.431 (0.379)
Alcohol	0.183 (0.387)	0.183 (0.387)	0.215 (0.411)	0.247 (0.431)	0.348 (0.427)
Tobacco (smoked or chewed)	0.373 (0.484)	0.386 (0.487)	0.405 (6.491)	0.306 (0.461)	−0.144 (0.098)
Illicit drugs	0.065 (0.247)	0.194 (0.395)	0.074 (0.262)	0.053 (0.224)	−1.531 (0.600)*
Ergogenic drugs	0.049 (0.216)	0.113 (0.317)	0.053 (0.224)	0.032 (0.176)	−1.264 (0.806)
Ergogenic substances	0.150 (0.357)	0.226 (0.421)	0.098 (0.297)	0.053 (0.224)	−1.799 (0.677)*
Attitudes and beliefs					
Attitudes toward school	5.062 (1.315)	4.855 (1.393)	4.737 (1.306)	3.842 (1.328)	−0.878 (0.194)*
Negative consequences of drug use	5.915 (1.072)	5.877 (1.003)	5.211 (1.370)	5.179 (1.142)	−0.462 (0.171)*
Positive consequences of drug use	2.165 (1.262)	2.391 (1.175)	2.616 (1.422)	2.787 (1.177)	0.285 (0.179)
Descriptive norms about peers	4.373 (1.734)	4.207 (1.607)	5.763 (2.171)	5.826 (1.961)	1.146 (0.281)*
Injunctive norms about peers	2.851 (1.205)	3.023 (1.280)	3.422 (1.248)	3.628 (1.212)	0.326 (0.175)**
Injunctive norms about authority figures	1.525 (0.940)	1.540 (0.901)	2.116 (1.399)	2.179 (1.287)	0.570 (0.182)*
Risky behavior	2.676 (1.297)	2.569 (1.333)	3.146 (1.397)	3.170 (1.168)	0.411 (0.179)*
Fear of consequences	4.626 (0.997)	4.552 (1.053)	4.178 (1.079)	4.087 (1.022)	−0.209 (0.163)
Attitudes toward drug testing	5.003 (1.585)	4.613 (1.626)	4.400 (1.662)	4.040 (1.645)	−0.312 (0.231)
Beliefs about testing efficacy	4.847 (1.081)	4.863 (0.942)	4.416 (1.180)	4.274 (1.108)	−0.480 (0.169)*
Beliefs regarding testing benefits	4.868 (1.210)	4.633 (1.112)	4.412 (1.396)	3.983 (1.206)	−0.414 (0.162)*
Likelihood of being tested	4.557 (2.179)	4.642 (1.947)	5.700 (1.897)	4.622 (1.697)	−0.539 (0.353)
Psychological reactance	1.994 (0.968)	2.335 (1.038)	2.663 (1.224)	2.883 (1.195)	0.294 (0.163)**
Testing as a reason not to use	4.610 (1.301)	4.543 (1.249)	4.704 (1.276)	4.299 (1.179)	−0.279 (0.179)

* $p < 0.05$; ** $p < 0.10$.
Note. The "illicit drug" index includes marijuana, cocaine, amphetamines, narcotics, sniffing glue or paint, and phencyclidine (PCP). The "ergogenic drug" index includes anabolic steroids, androstenedione, and amphetamines. The "ergogenic substance" index includes anabolic steroids, androstenedione, amphetamines, creatine, and pseudoephedrine. The "any drugs" index includes all listed drugs. Logistic regression was used for the analysis of the drug use measures.

TABLE 1 (continued)

Non-athletes drug use proportions and attitude construct means (and standard deviations) for the experimental and control groups before and after the drug testing intervention.

	Control		Treatment		Group* time interaction β (SE)
	Pretest mean (SD)	Posttest mean (SD)	Pretest mean (SD)	Posttest mean (SD)	
Lifetime drug use					
Any drugs[a]	0.809 (0.393)	0.795 (0.404)	0.822 (0.383)	0.835 (0.371)	0.030 (0.121)
Alcohol	0.757 (0.429)	0.754 (0.431)	0.770 (0.421)	0.787 (0.409)	0.009 (0.112)
Tobacco (smoked or chewed)	0.667 (0.471)	0.672 (0.469)	0.706 (0.456)	0.679 (0.467)	−0.051 (0.100)
Illicit drugs	0.545 (0.498)	0.603 (0.489)	0.609 (0.488)	0.578 (0.494)	−0.115 (0.095)
Ergogenic drugs	0.230 (0.421)	0.231 (0.421)	0.202 (0.401)	0.174 (0.379)	−0.048 (0.113)
Ergogenic substances[a]	0.241 (0.428)	0.284 (0.451)	0.221 (0.415)	0.222 (0.416)	−0.060 (0.107)
Past 30-day drug use					
Any drugs[a]	0.482 (0.500)	0.509 (0.500)	0.553 (0.497)	0.556 (0.497)	−0.041 (0.095)
Alcohol	0.268 (0.443)	0.366 (0.482)	0.404 (0.491)	0.417 (0.493)	−0.118 (0.099)
Tobacco (smoked or chewed)	0.373 (0.484)	0.386 (0.487)	0.405 (0.491)	0.306 (0.461)	−0.144 (0.098)
Illicit drugs	0.239 (0.426)	0.322 (0.467)	0.327 (0.469)	0.266 (0.442)	−0.183 (0.103)**
Ergogenic drugs	0.045 (0.207)	0.095 (0.293)	0.075 (0.263)	0.064 (0.245)	−0.255 (0.186)
Ergogenic substancesa	0.054 (0.226)	0.112 (0.315)	0.092 (0.289)	0.083 (0.276)	−0.241 (0.170)
Attitudes and beliefs					
Attitudes toward school	4.073 (1.718)	3.655 (1.626)	4.013 (1.559)	3.801 (1.675)	0.061 (0.074)
Descriptive norms about peers	4.693 (2.552)	5.193 (2.217)	4.983 (2.346)	5.549 (2.205)	0.020 (0.108)
Injunctive norms about peers[b]	3.900 (1.741)	3.744 (1.616)	4.022 (1.668)	4.035 (1.659)	0.022 (0.076)
Risky behavior[b]	3.591 (2.190)	3.607 (2.013)	3.852 (2.050)	3.963 (2.087)	0.012 (0.095)
Attitudes toward drug testing	3.887 (1.707)	3.643 (1.713)	3.581 (1.889)	3.502 (1.788)	0.049 (0.080)
Beliefs about testing efficacy	3.650 (1.364)	3.560 (1.425)	3.578 (1.346)	3.333 (1.394)	−0.036 (0.063)
Psychological reactance[b]	3.468 (1.698)	3.295 (1.767)	3.731 (1.976)	3.601 (1.804)	−0.003 (0.084)
Testing as a reason not to use[b]	3.557 (1.501)	3.423 (1.549)	3.534 (1.462)	3.381 (1.421)	0.004 (0.068)

* $p < 0.05$; ** $p < 0.10$.
Note. The "illicit drug".
a Index does not include pseudoehpedrine that is part of the athlete index.
b Construct does not have all the times that are part of the athlete constructs.

Conclusions of the authors	Random drug testing may have reduced substance use among athletes. However, worsening of risk factors and small sample size suggests caution to this drug prevention approach should be exercised. A larger, long-term study to confirm these findings is necessary.
Author (year)	**Goldberg et al. (2007)**
Objective	To assess the effects of random DAT among high school athletes.
Study design	Prospective randomised controlled study of a single cohort among five intervention high schools with a DAT policy and six schools with a deferred policy, serially assessed by voluntary, confidential questionnaires. Surveys were administered over five separate periods: during the beginning/autumn and the end/spring of the 2000–2001 and 2001–2002 school years, and during the autumn of the 2002–2003 school year.
Participants	DAT: five schools (653 student-athletes); control: six schools (743 student-athletes).
Outcomes	Illicit drug use (alcohol, marijuana, amphetamines, narcotics, sniffing glue, anabolic steroids) with and without alcohol use assessed at the beginning and end of each school year for the past month and prior year.

TABLE 1 (continued)

Results

Mean drug use index score by condition across time

Substance use	Time 1	Time 2	Time 3	Time 4	Time 5
Past month illicit drug use					
Deferred	0.207	0.237	0.168	0.265	0.261
DAT	0.177	0.237	0.177	0.276	0.165
Past month illicit drug and alcohol use					
Deferred	0.516	0.663	0.562	0.649	0.614
DAT	.558	.640	.572	.836	0.627
Past year illicit drug use[b]					
Deferred	0.358	0.475	0.410	0.453	0.431
DAT	0.454	0.417**	0.447	0.457	0.305**
Past year illicit drug and alcohol use					
Deferred	0.910	1.092	1.092	1.068	1.033
DAT	0.980	0.977*	0.955*	1.055	0.917

[a] Index scores range from 0–3, where 0 = no use and 3 = heavy use.
[b] Effect of treatment across time was significant, $F(4,36) = 4.22$, $p < .01$.
* $p < .05$ for post hoc contrast test of treatment from Time 1 to this time.
** $p < .01$.

Conclusions of the authors

No DAT deterrent effects were evident for past-month use during any of four follow-up periods. Prior-year drug use was reduced in two of four follow-up self-reports, and a combination of drug and alcohol use was reduced at two assessments as well. Overall, drug testing was accompanied by an increase in some risk factors for future substance use. More research is needed before DAT is considered an effective deterrent for school-based athletes.

Author (year)

James-Burdumy et al. (2012)

Objective

To test the effectiveness of MRSDT in reducing substance use among high school students.

Study design

Cluster RCT.

Participants

36 high schools and 10 980 students in grades 9–12. Half the schools were randomly assigned to a treatment group that was permitted to implement MRSDT immediately, and the remaining half were assigned to a control group that delayed MRSDT until after follow-up data collection was completed one year later, in spring 2008. Data from self-administered student questionnaires were used to compare rates of substance use in treatment and control schools at follow-up.

Outcomes

Substance use, intention to use substances, perceived consequences of substance use, participation in covered activities, school connectedness.

Results

Impacts on substance use for covered-activity participants

Outcome	Treatment group	Control group	Difference	*p*[a]	Effect size[b]
Percentage of students that reported using the following in the past 6 months					
Any substance	52.61	49.72	2.90	.835	.07
Any substance except alcohol and tobacco	22.11	21.89	.23	1.000	.01
Any substance tested by the district's MRSDT program	33.43	32.55	.89	.984	.02
Percentage of students that reported using the following in the past 30 days					
Any substance	36.04	35.70	.34	1.000	.01
Any substance except alcohol and tobacco	15.03	16.52	–1.49	.910	–.07
Any substance tested by the district's MRSDT program	20.37	22.94	–2.57	.508	–.09
Percentage of students that reported they "Probably Will" or "Definitely Will" use the following within the next year					
Any substance	33.58	32.81	.77	.937	.02
Any substance except alcohol and tobacco	12.21	11.89	.32	.986	.02
Mean perceived positive consequences of substance use scale[c]	2.01	2.01	.00	.998	.00
Mean perceived negative consequences of substance use scale[d]	4.02	3.95	.07	.304	.07
Mean school connectedness scale[e]	2.80	2.80	.01	.902	.01
Sample size	1 350[f]	930[f]			

TABLE 1 (continued)

Impacts of MRSDT on non-participants in covered-activity

Outcome	Treatment group	Control group	Difference	p[a]	Effect size[b]
Percentage of students that reported using the following in the past 6 months					
Any substance	49.96	54.91	−4.95	.255	−.12
Any substance except alcohol and tobacco	16.83	19.31	−2.48	.673	−.10
Any substance tested by the district's MRSDT program	26.88	32.16	−5.28	.146	−.15
Percentage of students that reported using the following in the past 30 days					
Any substance	32.74	38.50	−5.75	.126	−.15
Any substance except alcohol and tobacco	10.16	12.69	−2.53	.531	−.15
Any substance tested by the district's MRSDT program	16.47	21.92	−5.46	.045*	−.21
Percentage of students that reported they "Probably Will" or "Definitely Will" use the following within the next year					
Any substance	34.09	33.31	.77	.960	.02
Any substance except alcohol and tobacco	8.01	7.93	.08	.999	.01
Mean perceived positive consequences of substance use scale[c]	2.11	2.03	.08	.467	.08
Mean perceived negative consequences of substance use scale[d]	4.09	4.06	.03	.823	.03
Mean school connectedness scale[e]	2.91	2.91	.01	.862	.01
Sample size	1 350[f]	1 100[f]			

For both:
a The *p*-values reported in this table account for the clustering of students within schools and for multiple hypothesis testing.
b For dichotomous outcomes, the effect size is calculated using the Cox index, which equals the standardised log odds ratio between the treatment and control groups.
c Scale ranges from 1 to 5. Higher values on the scale indicate more positive attitudes towards substance use.
d Scale ranges from 1 to 5. Higher values on the scale indicate more negative attitudes towards substance use.
e Scale ranges from 1 to 4. Higher values on the scale indicate greater connection to school.
f Reported student sample sizes are rounded to the nearest 10 in accordance with the National Center for Education Statistics (NCES) publication policy.
* $p < 0.05$.

Conclusions of the authors	MRSDT shows promise in reducing illicit substance use among high school students. The impacts of this study were measured for a one-year period and may not represent longer term effects.
Author (year)	**Terry-McElrath et al. (2013)**
Objective	To examine associations between school SDT, substance use and participation in extracurricular activities.
Study design	Descriptive analyses: analysis of use questionnaire data collected from 1998 to 2011.
Participants	89 575 students in 883 middle schools and 157 400 students in 1 463 high schools.
Outcomes	Current prevalence of SDT; SDT trends over time; associations between substance use and SDT type, volume or duration among the general student population or students participating in activities subject to testing; associations between students' beliefs/attitudes with regard to marijuana use and SDT; associations between extracurricular participation rates and SDT.

TABLE 1 (continued)

Results

Multivariate associations between school drug testing and student past 30-day illicit substance use

	School	Students	Use frequency			Any/none use		
	N	*N*	Coeff.	(SE)	*p*	OR	(95% CI)	*p*
Middle School								
General population								
Marijuana use								
Any testing	883	87 815	−.053	(.065)		.97	(.834 1.132)	
Any for-cause testing	883	87 815	−.021	(.082)		.98	(.828 1.162)	
Any random testing	882	87 798	.008	(.111)		1.00	(.797 1.266)	
OTM use								
Any testing	883	88 827	.012	(.008)		1.03	(.893 1.195)	
Any for-cause testing	883	88 827	.009	(.010)		1.00	(.838 1.186)	
Any random testing	882	88 810	.017	(.015)		1.10	(.898 1.343)	
Student athletes								
Marijuana use								
Any athlete testing	812	19 861	−.272	(.081)	**	.77	(.527 1.131)	
Any random athlete testing	512	13 067	−.243	(.085)	**	.71	(.464 1.078)	
OTM use								
Any athlete testing	812	20 050	−.004	(.010)		1.11	(.781 1.584)	
Any random athlete testing	512	13 183	.001	(.012)		1.18	(.780 1.781)	
Students participating in nonathletic extracurricular activities								
Marijuana use								
Any nonathlete extracurricular testing	814	21 616	.129	(.176)		1.10	(.727 1.662)	
Any random nonathlete extracurricular testing	512	13 840	.016	(.125)		.94	(.636 1.379)	
OTM use								
Any nonathlete extracurricular testing	814	21 776	.045	(.045)		1.50	(.869 2.579)	
Any random nonathlete extracurricular testing	512	13 931	.614	(.566)		1.72	(1.041 2.857)	*
High School								
General population								
Marijuana use								
Any testing	1 463	154 337	.062	(.084)		1.03	(.965 1.104)	
Any for-cause testing	1 462	154 198	.182	(.092)	*	1.08	(1.006 1.165)	*
Volume of for-cause testing[a]	279	32 585	−.006	(.003)	*	1.00	(.997 1.001)	
Any random testing	1 461	154 105	−.253	(.102)	*	.85	(.772 .940)	**
Volume of random testing[a]	114	12 913	−.001	(.001)		1.00	(.999 1.000)	+
Random testing among all students	1 460	153 966	−.323	(.190)	+	.77	(.597 1.003)	+
When any random testing was implemented[a]								
This or last year	105	11 325	.209	(.259)		1.03	(.790 1.346)	
2–3 years ago			−.318	(.212)		.95	(.777 1.162)	
4+ years ago				(ref.)			(ref.)	
OTM use								
Any testing	1 463	156 583	.015	(.006)	*	1.10	(1.025 1.184)	**
Any for-cause testing	1 462	156 440	.013	(.007)	+	1.11	(1.024 1.196)	*
Volume of for-cause testing	279	33 016	.000	(.000)		1.00	(.997 1.003)	
Any random testing	1 461	156 346	.027	(.011)	*	1.11	(1.002 1.220)	*
Volume of random testing	114	13 103	.000	(.000)		1.00	(.999 1.000)	
Random testing among all students	1 460	156 203	.027	(.023)		1.20	(1.008 1.440)	*
When any random testing was implemented								
This or last year	105	11 501	.086	(.036)	*	1.22	(.937 1.588)	
2–3 years ago			−.032	(.024)		.87	(.720 1.053)	
4+ years ago		(ref.)		(ref.)				
Student athletes								
Marijuana use								
Any athlete testing	1 341	29 252	−.328	(.137)	*	.80	(.689 .935)	**
Any random athlete testing	831	19 536	−.420	(.169)	*	.76	(.631 .924)	**
OTM use								
Any athlete testing	1 341	29 609	.004	(.014)		1.21	(.998 1.474)	+
Any random athlete testing	831	19 777	−.001	(.017)		1.19	(.916 1.534)	
Students participating in nonathletic extracurricular activities								
Marijuana use								
Any nonathlete extracurricular testing	1 346	34 170	−.135	(.189)		.78	(.668 .909)	**
Any random nonathlete extracurricular testing	832	22 368	−.308	(.206)		.71	(.591 .848)	***
OTM use								
Any nonathlete extracurricular testing	1 346	34 527	.039	(.020)	*	1.24	(.987 1.547)	+
Any random nonathlete extracurricular testing	832	22 610	.010	(.017)		1.07	(.810 1.415)	

CI, confidence interval; Coeff, estimated regression coefficient; high school, 10th and 12th grades combined; middle school, 8th grade; OR, odds ratio; SE, standard error.

[a] Only for students in schools with any of the type of testing specified.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Conclusions of the authors

Moderately lower marijuana use was associated with any random testing of the general high school student population and for school SDT of middle and high school subpopulations specifically subject to testing (athletes or participants in non-athletic extracurricular activities). However, SDT was generally associated with increased use of illicit drugs OTM. Because the study design is observational and the data are cross-sectional, no strong causal conclusions can be drawn. However, there is evidence of lower marijuana use in the presence of SDT, and evidence of higher use of illicit drugs OTM. Until further research can clarify these apparently opposing associations, schools should approach SDT with caution.

TABLE 1 (continued)

Author (year)	**Yamaguchi et al. (2003)**
Objective	To examine the association between drug testing and reported drug use by students.
Study design	Report. Data for the analyses were obtained through two related studies. Student data were obtained from the Monitoring the Future study, supported by the National Institute on Drug Abuse, consisting of nationally representative students in grades 8, 10 and 12. Data on school characteristics, including drug-testing policies, were obtained from administrators (usually principals) of the relevant Monitoring the Future schools under a separately funded research project.
Participants	30 000 8th-grade students in 260 middle schools; 23 000 10th-grade students in 227 high schools; and 23 000 12th-grade students in 235 high schools.
Outcomes	Student marijuana use, student illicit drug use OTM.
Results	Marijuana use

	12-month marijuana use					12-month other than marijuana use				
		1–7 Scale		Prevalence			1–7 Scale		Prevalence	
	N	Mean	SD	Mean	SD	*N*	Mean	SD	Mean	SD
8th grade all students										
Drug testing of any kind										
Yes	26 423	1.41	1.14	.16	.35	26 877	1.05	.22	.10	.29
No	3 236	1.40	1.16	.15	.35	3 279	1.05	.28	.10	.30
Drug testing based on cause/suspicion										
Yes	27 024	1.41	1.15	.16	.35	27 486	1.05	.23	.10	.29
No	2 616	1.36	1.04	.14	.32	2 650	1.04	.23	.09	'27
10th grade all students										
Drug testing of any kind										
Yes	17 858	2.01	1.81	.31	.46	18 066	1.10	.35	.17	.37
No	5 559	2.01	1.80	.33	.47	5.629	1.09	.33	.16	.37
Drug testing based on cause/suspicion										
Yes	18 915	2.01	1.82	.32	.46	19 135	1.10	.35	.17	.37
No	4 502	1.99	1.73	.32	.46	4 560	1.09	.31	.16	.35
12th grade all students										
Drug testing of any kind										
Yes	17 437	2.20	1.94	.36	.47	17 758	1.12	.41	.19	.39
No	5 653	2.27	1.97	.37	.47	5 740	1.14	.43	.21	.39
Drug testing based on cause/suspicion										
Yes	18 584	2.19	1.93	.36	.47	18 923	1.12	.41	.19	.39
No	4 506	2.34	1.98	.39	.47	4 575	1.15	.44	.21	.39

Note: Weights were used to estimate a nationally representative sample of students in schools.

Drug testing and other illicit drug use
Similar to results for marijuana use, drug testing of any kind and drug testing for cause and suspicion were not significant predictors of the use of other illicit drugs among students in grades 8, 10, and 12. Even after controlling for student demographic characteristics, drug testing was not a significant predictor of other illicit drug use in any of the samples.

Conclusions of the authors	Does drug testing prevent or inhibit student drug use? Members of the US Supreme Court appear to believe it does. However, among the 8th-,10th- and 12th-grade students surveyed in this study, school drug testing was not associated with either the prevalence or the frequency of student marijuana use or of other illicit drug use. Nor was drug testing of athletes associated with lower-than-average marijuana and other illicit drug use by high school male athletes. Even among those who identified themselves as fairly experienced marijuana users, drug testing was also not associated with either the prevalence or the frequency of marijuana or other illicit drug use.

References

Included studies

Barrington, K. D. (2007), *The effect of voluntary, randomised, drug testing on secondary school students' self-reported rates of illegal drug use: an analysis of secondary school students living in rural, low-income, south-central Texas*, ProQuest, Ann Arbour, MI.

Barrington, K. D. (2008), 'Voluntary, randomised, student drug-testing: impact in a rural, low-income, community', *Journal of Alcohol and Drug Education* 52, pp. 47–66.

Goldberg, L., Elliot, D. L., MacKinnon, D. P., Moe, E., Kuehl, K. S., Nohre, L. and Lockwood, C. M. (2003), 'Drug testing athletes to prevent substance abuse: background and pilot study results of the SATURN (Student Athlete Testing Using Random Notification) study', *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine* 32, pp. 16–25. Erratum in *Journal of Adolescent Health* 32, pp. 325.

Goldberg, L., Elliot, D. L., MacKinnon, D. P., Moe, E. L., Kuehl, K. S., Yoon, M., Taylor, A. et al. (2007), 'Outcomes of a prospective trial of student-athlete drug testing: the Student Athlete Testing Using Random Notification (SATURN) study', *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine* 41, pp. 421–429. Erratum in *Journal of Adolescent Health* 42, p. 107.

James-Burdumy, S., Goesling, B., Deke, J. and Einspruch, E. (2012), 'The effectiveness of mandatory-random student drug testing: a cluster randomized trial', *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine* 50, pp. 172–178.

Terry-McElrath, Y. M., O'Malley, P. M. and Johnston, L. D. (2013), 'Middle and high school drug testing and student illicit drug use: a national study 1998–2011', *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine* 52, pp. 707–715.

Yamaguchi, R., Johnston, L. D. and O'Malley, P. M. (2003), 'Relationship between student illicit drug use and school drug-testing policies', *The Journal of School Health* 73, pp. 159–164.

Excluded studies

Coombs, R. H. and Ryan, F. J. (1990), 'Drug testing effectiveness in identifying and preventing drug use', *The American Journal of Drug and Alcohol Abuse* 16, pp. 173–184.

Coombs, R. H. and Coombs, C. J. (1991), 'The impact of drug testing on the morale and well-being of mandatory participants', *The International Journal of the Addictions* 26, pp. 981–992.

DuPont, R. L., Merlo, L. J., Arria, A. M. and Shea, C. L. (2013), 'Random student drug testing as a school-based drug prevention strategy', *Addiction* 108, pp. 839–845.

Garcia-Jimenez, S., Heredia-Lezama, K., Bilbao-Marcos, F., Fuentes-Lara, G., Monroy-Noyola, A. and Deciga-Campose, M. (2008), 'Screening for marijuana and cocaine abuse by immunoanalysis and gas chromatography an exploratory study in a college population at Universidad Autonoma del Estado de Morelos in Mexico', pp. 422–425, in Kuhar, M. J. and Kuhar, M. J. (eds), *Drug addiction: research frontiers and treatment advances*, Annals of the New York Academy of Sciences, New York.

James-Burdumy, S., Goesling, B., Deke, J. and Einspruch, E. (2010), The effectiveness of mandatory-random student drug testing, *Journal of Adolescent Health* 50 (2012) 172–178 NCEE 2010-4025.

Levy, S., Siqueira, L. M., Ammerman, S. D., Gonzalez, P. K., Ryan, S. A., Smith, V. C., et al. (2014), 'Testing for drugs of abuse in children and adolescents', *Pediatrics* 133, pp. e1798–e1807.

Shek, D. T. (2010), 'School drug testing: a critical review of the literature', *The Scientific World Journal* 10, pp. 356–365.

Sznitman, S. R. and Romer, D. (2014), 'Student drug testing and positive school climates: testing the relation between two school characteristics and drug use behavior in a longitudinal study', *Journal of Studies on Alcohol and Drugs* 75, pp. 65–73.

Velasquez, J. (2010), 'Drug testing in schools: a brief review and analysis of recent events', *American Journal of Health Education* 41, pp. 180–186.

Additional references and further reading

Anderson, P. and Baumberg, B. (2006), *Alcohol in Europe a public health perspective*, Institute of Alcohol Studies (available at: https://ec.europa.eu/health/archive/ph_determinants/life_style/alcohol/documents/alcohol_europe_en.pdf accessed in April 2015).

European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2014), *European drug report, trends and developments*, Publications Office of the European Union, Luxembourg.

Faggiano, F., Minozzi, S., Versino, E. and Buscemi, D. (2014), 'Universal school-based prevention for illicit drug use', *Cochrane Database of Systematic Reviews* 12, CD003020 doi:10.1002/14651858.CD003020.pub3.

Green, L. W. and Kreuter, M. W. (1991), 'Health promotion today and a framework for planning', pp. 1–43, in Green, L. W. and Kreuter, M. W. (eds), *Health promotion planning an educational and environmental approach,* 2nd edition, Mayfield Publishing Co., Mountain View, CA.

Hibell, B., Guttormsson, U., Ahlström, S., Balakireva, O., Bjarnason, T., Kokkevi, A. and Kraus, L. (2011), *The 2011 ESPAD report: substance use among students in 36 European countries* (available at http://www.espad.org/sites/espad.org/files/The_2011_ESPAD_Report_FULL_2012_10_29.pdf).

Higgins, J. P. T. and Green, S.. (2011), *Cochrane handbook for systematic reviews of interventions* version 5.1.0 [updated March 2011], The Cochrane Collaboration (available at www.cochrane-handbook.org).

Lachenmeier, D. W. and Rehm, J. (2015), 'Comparative risk assessment of alcohol, tobacco, cannabis and other illicit drugs using the margin of exposure approach', *Scientific Reports* 5, p. 8126.

Levy, S. and Schizer, M. (2015), 'Adolescent drug testing policies in schools', *Pediatrics* 135, pp. e1107–e1112.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G. and PRISMA Group (2009), 'Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement', *Annuals of Internal Medicine* 151, pp. 264–269.

Moss, H. B., Chen, C. M. and Yi, H. Y. (2014), 'Early adolescent patterns of alcohol, cigarettes, and marijuana polysubstance use and young adult substance use outcomes in a nationally representative sample', *Drug and Alcohol Dependence* 136, pp. 51–62.

Nilson, M. (2004), *Drug testing in schools in European countries*, Pompidou Group Study, EMCDDA P-PG, Ethics 7 (available at https://wcd.coe.int/ViewDoc.jsp?id=1207521&Site=DG3-Pompidou).

RT (2013), *Russia introduces drug tests for schoolchildren*, https://www.rt.com/politics/drug-tests-students-schoolchildren-372/, accessed November 2017.

SAMSHA (2014), *Results from the 2013 National Survey on Drug Use and Health: summary of national findings* (available at http://store.samhsa.gov/home; accessed in June 2015).

Trenz, R. C., Scherer, M., Harrell, P., Zur, J., Sinha, A. and Latimer, W. (2012), 'Early onset of drug and polysubstance use as predictors of injection drug use among adult drug users', *Addictive Behaviors* 37, pp. 367–372.

Winters, K. C. and Lee, C. Y. (2008), 'Likelihood of developing an alcohol and cannabis use disorder during youth: association with recent use and age', *Drug and Alcohol Dependence* 92, pp. 239–247.

Appendix

Search strategies

CDAG specialised register (via CRS)

18 October 2015 (7 hits)

1. (schools:MH) AND (INREGISTER)
2. ((pupil* OR student* OR school* OR college*):ti,ab) AND (INREGISTER)
3. ((pupil* OR student* OR school* OR college*):xin) AND (INREGISTER)
4. #1 OR #2 OR #3
5. (((drug OR substance) near3 testing*):ti,ab,xin) AND (INREGISTER)
6. ((Substance Abuse Detection:MH) AND (INREGISTER)) AND (INREGISTER)
7. (((Drug or Substance) near3 (detection*:ti,ab,xin)) AND (INREGISTER)
8. #5 OR #6 OR #7
9. #4 AND #8

CENTRAL, DARE (via The Cochrane Library)

Issue 10, October 2015 (CENTRAL 19 hits)

1. MeSH descriptor: [Substance Abuse Detection] explode all trees
2. (drug near/2 testing*):ti,ab
3. ('drug use' or 'drug abuse' or 'substance abuse') near/3 (testing* or detect*)
4. (heroin or hallucinogen* or cocaine or amphetamine* or lsd or ketamine or cannabis or marihuana or marijuana or hashish or steroid* or morphine or ecstasy or mdma) near/3 detect*:ab,ti
5. #1 or #2 or #3 or #4
6. MeSH descriptor: [Schools] explode all trees
7. (pupil* or student* or school* or college*):ab,ti
8. #6 or #7
9. #5 and #8

MEDLINE (via PubMed)

February 2017 (321 hits)

((((“Substance Abuse Detection”[Mesh] OR Substance Abuse Detection*[tiab] OR Drug testing[tiab] OR Substance Abuse Testing*[tiab] OR Drug Abuse Screening*[tiab] OR Drug Abuse Testing*[tiab] OR Drug Abuse Detection*[tiab] OR Street Drug Testing*[tiab] OR Street Drug Detection*[tiab] OR Illicit Drug Detection[tiab])) OR ((“substance”[TIAB] AND “abuse”[TIAB] AND “detection”[tiab])))) AND (“Schools”[Mesh] OR pupil*[tiab] OR student*[tiab] OR school*[tiab] OR college*[tiab])

EMBASE (via embase.com)

18 October 2015 (294 hits)

school'/exp OR pupil*:ab,ti OR student*:ab,ti OR school*:ab,ti OR college*:ab,ti AND ((drug NEAR/2 testing*):ab,ti OR ('drug use' OR 'drug abuse' OR 'substance abuse' OR 'cannabis use') NEAR/3 (testing* OR detect*) OR ((heroin OR hallucinogen* OR cocaine OR amphetamine* OR lsd OR ketamine OR cannabis OR marihuana OR marijuana OR hashish OR steroid* OR morphine OR ecstasy OR mdma) NEAR/3 detect*):ab,ti)

ERIC (via eric.ed.gov)

18 October 2015 (116 hits)

drug testing schools (peer reviewed only)

Web of Science (Thomson Reuters)

18 October 2015 (164 hits)

1. TOPIC: (((drug NEAR testing*) NEAR school*))
2. TOPIC: (((drug NEAR testing*) NEAR student*))
3. TOPIC: (((drug NEAR detect*) NEAR student*))
4. TOPIC: (((drug NEAR detect*) NEAR school*))
5. TOPIC: (((substance NEAR detect*) NEAR school*))
6. #5 OR #4 OR #3 OR #2 OR #1

Indexes=SCI-EXPANDED, SSCI, A&HCI Timespan=All years

TABLE A1

Characteristics of the excluded studies

Author	Description of study
Coombs and Ryan (1990)	To evaluate to what extent drug testing effectively identifies drug users and prevents further drug use among the 624 intercollegiate athletes (500 drug-tested and 124 not-tested participants)
Coombs and Coombs (1991)	To assess the impact of drug testing on the morale and well-being of mandatory participants
DuPont et al. (2013)	The paper describes the goals and current practice of school-based RSDT as part of an overall drug prevention strategy, briefly explores the available literature evaluating its effectiveness and discusses the controversies related to RSDT
Garcia-Jimenez et al. (2008)	To determine the current or past use of drug abuse through a questionnaire applied to a student population at the Universidad Autnoma del Estado de Morelos
James-Burdumy et al. (2010)	Report of the US National Centre for Education Evaluation and Regional Assistance aimed at presenting information on the conditions of implementation and impacts of the programmes being evaluated
Levy et al. (2014)	The objective of this report was to provide guidance to paediatricians and other clinicians on the efficacy and efficient use of drug testing based on a review of the nascent scientific literature, policy guidelines and published clinical recommendations
Shek (2010)	Review to explore the effectiveness of school drug testing, particularly in Chinese culture, including studies already included in this review
Sznitman and Romer (2014)	The study, on the basis of telephonic interview, aims to test the relation between two school characteristics and drug use
Velasquez (2010)	The narrative review provides a review of the literature, as well as a summary of recent RSDT events in US public schools without numerical data

TD-AU-17-003-EN-N

Acknowledgements

The report was written by Laura Amato, Zuzana Mitrova and Marina Davoli (Cochrane Drugs and Alcohol Group, Department of Epidemiology, Lazio Regional Health Service, Rome, Italy).

EMCDDA project team: Marica Ferri, Gregor Burkhart, Bruno Guarita, Alessandra Bo and Lucas Wiessing.

About the EMCDDA

The European Monitoring Centre for Drugs and Drug Addiction is the hub of drug-related information in Europe. Its mission is to provide the European Union and its Member States with 'factual, objective, reliable and comparable information' on drugs and drug addiction and their consequences. Established in 1993, it opened its doors in Lisbon in 1995, and is one of the European Union's decentralised agencies. The Centre offers policymakers the evidence base they need for drawing up drug laws and strategies. It also helps professionals and researchers pinpoint best practice and new areas for analysis.

Related publications and web information

EMCDDA

- *Health and social responses to drug problems: a European guide*, 2017
- *Drugs and vulnerable groups of young people*, Selected issue, 2008
- *A cannabis reader: global issues and local experiences*, Monograph, 2008
- *Can mass media campaigns prevent young people from using drugs?*, Perspectives on drugs, 2013

ESPAD

- *ESPAD Report 2015. Results from the European School Survey Project on Alcohol and Other Drugs*, 2016

These and all other EMCDDA publications are available from www.emcdda.europa.eu/publications

Luxembourg: Publications Office of the European Union
PDF doi: 10.2810/179405 | ISBN 978-92-9497-246-0

This publication is only available in electronic format.

EMCDDA, Praça Europa 1, Cais do Sodré, 1249-289 Lisbon, Portugal
Tel. (351) 211 21 02 00 | info@emcdda.europa.eu
emcdda.europa.eu | twitter.com/emcdda | facebook.com/emcdda

Publications Office