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Youth Sport Programs that Address Substance Use — An Environmental Scan

July 2016

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This document was published by the Canadian Centre on Substance Abuse (CCSA).

Suggested citation: McKiernan, Anna. (2016). *Youth Sport Programs that Address Substance Use — An Environmental Scan*. Ottawa, Ont.: Canadian Centre on Substance Abuse.

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Production of this document has been made possible through a financial contribution from Health Canada. The views expressed herein do not necessarily represent the views of Health Canada.

This document can also be downloaded as a PDF at www.ccsa.ca

Ce document est également disponible en français sous le titre :

Programmes sportifs pour jeunes qui abordent la consommation de substances – Analyse environnementale

ISBN 978-1-77178-333-0

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Acknowledgements

The author wishes to acknowledge the external reviewers for their comments on this report.

Executive Summary

Key Messages

- Although results are mixed at this time, research shows a relationship between youth substance use and sport participation. In some cases, participation in sport has led to an increase in the use of certain substance (e.g., alcohol), while in others, it has led to a decrease (e.g., illicit drugs).
- Although few sport programs that include substance use education have been evaluated for their ability to influence youth substance use, there is growing evidence suggesting that sport can be used as a vehicle to decrease substance use in this population.
- The most common program types to use the sport environment to influence youth are peer-to-peer programs; screening, consultation and counselling programs; and programs with social norming campaigns. These programs were most commonly based on the Theory of Planned Behaviour and, to a lesser extent, Social Learning Theory, both of which state that youth make decisions based on their knowledge and attitudes, which are influenced by those around them.
- Sport provides an optimal opportunity to leverage a team environment to influence youth, to allow for targeted and tailored prevention efforts, and to offer an avenue to teach youth alternative behaviours to substance use.

The Issue

Sports is one of the most common activities participated in by youth: more than 80% of youth ages 3 to 17 participate in some form of sport (Solutions Research Group, 2014). Because of this, some substance use prevention stakeholders have hoped to harness sport as an opportunity to prevent and reduce substance use among this age group. Unfortunately, the nature of the relationship between substance use and sport is inconclusive — some research shows participation in sports is protective against use of certain substances (e.g., marijuana), but can also lead to an increase in use for other substances (e.g., alcohol). The complexity of the relationship grows when factoring in contextual considerations such as sport type, sport experience and involvement of a coach. With this in mind, it is not surprising that there is a lack of research highlighting sport participation as an effective tool in preventing substance use among youth at this time. There are a number of sport programs, however, that have incorporated substance use education or prevention into their program design and that have been evaluated for effectiveness.

Research in this area, particularly in the Canadian context, is lacking on several fronts. There is minimal research illustrating how sport can influence substance use among Canadian youth. There is also no consistent definition for sport in Canadian data collection. The research also fails to provide any information about how Canada uses sport as a prevention tool for youth. The Canadian Centre on Substance Abuse (CCSA) has worked with stakeholders in the fields of drug use prevention, sport and youth-related services to determine how we can begin to clarify research in this area.

Stakeholders identified a need for an all-encompassing overview of how sport has been used in the field of youth substance use prevention to date, which led to this environmental scan. The intended audience for this scan includes practitioners working in a youth- or sport-based field who might be

interested in developing or incorporating a sport-based prevention program into their respective organization, as well as researchers in the fields of youth substance use prevention or positive youth development and sport.

Objectives

The objectives of the environmental scan were:

- To review and summarize North American youth sport programs that contain substance use education;
- To examine whether these sport programs effectively reduce substance use among youth (ages 10 to 24); and
- To summarize lessons learned in this area based on peer-reviewed evaluations in order to facilitate the exchange of knowledge and help program developers shape their own evidence-based community program or adopt a pre-developed sport program.

Method

The environmental scan included a search of both peer reviewed and grey literatures related to the topic. There was also an information request sent to relevant organizations and a posting to the Canadian Sport and Youth Substance Abuse Prevention LinkedIn group. To be included, the program had:

- To be grounded in sport (team or individual) or targeted at athletes;
- To include information or education on alcohol, tobacco or other drugs;
- To aim to prevent or delay substance use or reduce the harms associated with it;
- To be delivered at the primary or secondary intervention level;
- To target young people ages 10 to 24;
- To be located in Canada or elsewhere in the Western world; and
- To be delivered in English or French or both.

The scan included a total of 12 programs that have been evaluated for effectiveness and 14 programs that appeared in the grey literature (only one of which had an evaluation component).

Results

Many of the initiatives found in this scan incorporated evidence-based substance use prevention approaches in their program design, such as using a flexible and multilayered approach, delivering programming at key developmental times (i.e., high school) and targeting programs to sub-groups (e.g., sports team). Although these program types are supported in youth prevention literature, evidence of their effectiveness in sport-based initiatives is relatively limited, meaning any key considerations listed here are based solely on this emerging peer-reviewed literature.

The evaluated results from the scan show that the most common program types to use the sport environment to influence youth are peer-to-peer programs; screening, consultation and counselling programs; and programs with social norming campaigns. These programs were most commonly based on the Theory of Planned Behaviour (Ajzen, 2012) and, to a lesser extent, Social Learning Theory (Bandura, 1977), both of which state that youth make decisions based on their knowledge

and attitudes, which are influenced by those around them. Most of the reviewed programs began at the primary prevention level of the community (e.g., sport teams). However, the screening, consultation and counselling programs targeted the secondary level (youth at risk for substance use). The following list is of common program types, along with preliminary findings from the peer evaluations found in the scan:

- Peer-to-Peer programs used team leaders or ambassadors to deliver programming, (e.g., the Athletes Targeting Health Exercise and Nutrition Alternatives [ATHENA] Program). These programs showed that the team is an effective source to influence behaviour change and have led to a reduction in intentions to use drugs and an increase in healthier habits.
- Educational programs taught participants about the harms of drugs and alcohol on athletes, as well as healthy behaviour alternatives (e.g., the Canadian Lacrosse Association Online Education Program). These programs were found to be effective in behaviour change as long as an alternative to unhealthy behaviour was provided.
- Social Norming programs used data from post-secondary campus environments to teach youth about the reality of drug use (e.g., rates, frequency and type of use) by their peers, (e.g., the eCHECK UP TO GO web-based intervention). These programs altered attitudes and resulted in behaviour change when targeted to a specific audience (e.g., athletes) rather than the general public.
- Screening, Consultation and Counselling programs used personalized feedback based on health screens to develop tailored health plans, (e.g., the Student Athlete Testing Using Random Notification [SATURN] program). These programs were effective when they incorporated education, screening, personal feedback and a tailored plan for the participant to change his or her behaviour.
- Programs that provided access to sport made sport available to youth to divert them from drug-related behaviours (e.g., the First Choice Physical Fitness Program). There is a lack of evaluation of these program types in terms of reducing substance use, but they might increase physical activity for participants.
- Multilevel programs used many of the above components in their program delivery, (e.g., the Athletic Prevention, Programming and Leadership Education [APPLE] model). Based on review of the literature, it is important that these programs ensure all components are appropriate for the audience and organization to achieve behaviour change.

Lessons Learned

Based on the results from the evaluated programs in this scan, some preliminary key considerations for practitioners interested in developing or adopting sport-based drug prevention programs include:

- Include peer-to-peer program administration as youth respond best to those whom they can relate. Leverage the team sports environment as team members can be influential in affecting behaviour change among program participants.
- Coaches have been shown to act as influential program facilitators given youth's respect for their skills and abilities related to sport. Consider incorporating a coach into prevention efforts.
- Include parents as potential participant influencers. If they are kept abreast of prevention efforts, they can reinforce program objectives in the home environment.

- Programs need to be applicable and relatable to their audience. The use of personal health screening, targeted feedback and personalized interventions was found to be useful to youth. Similarly, consider using famous athletes as examples of those negatively affected by substance use, as youth can relate to athletes to whom they look up.
- Programs that provide an alternative behaviour to substance use were more likely to result in behaviour change, as youth had a tangible and achievable alternative to substance use abstinence or cessation.
- Ensure programs goals are attainable by the target audience. Do not set restrictions that would not be achievable, such as unrealistic harm-reduction strategies.
- Program implementation considerations include making the program multipronged to ensure adaptability across contexts, training staff appropriately and selecting supportive staff, providing useful program materials relevant to participants (e.g., appropriate reading level), and basing the program on funding that will be consistent and attainable.

Conclusion

The purpose of this environmental scan was to compile a list of North American youth programs that are based in sport and contain substance use education, to examine whether these programs effectively prevent, delay or reduce youth substance use, and to summarize lessons learned from the evaluations. By examining these programs and extrapolating lessons learned, the further purpose of this scan was to facilitate knowledge exchange within the field and offer support to program developers in shaping or adopting their own community programs.

Although results about the role sport plays in influencing substance use among youth are mixed, there is some evidence supporting the use of a sport environment as a mechanism to deliver substance use prevention efforts that are based on evidence and tailored to the audience. Preliminary findings suggest that prevention efforts worth incorporating include peer-to-peer administration, provision of alternatives to negative behaviours, personalized feedback and social norming based on a participant's environment, physical screening and health plans, and use of multi-component programming. Similarly, programs based in a team environment, administered during key developmental time frames, relatable for youth and youth-friendly will have maximum effect on the target audience. Program implementation should also ensure that an intervention is flexible and realistic, and will be sustainable based on staff, funding and other relevant resources.

The scan has the following limitations:

- The lessons learned, although promising, were based on a small number of evaluations;
- The evaluations were conducted within specific environments, with certain populations and varying contexts (e.g., sport type, local laws, implementation factors), so findings might not be generalizable across all jurisdictions and programs; and
- It cannot be guaranteed that all relevant programs were picked up during the environmental scan, as some program information might not be evaluated or available online.

Future research aimed at better understanding the relationship between sport participation and youth substance use will be beneficial in further refining how sport programs can be used to prevent unhealthy behaviours such as risky substance use among youth. Similarly, more research and program evaluation is needed to validate the preliminary findings within the literature.

This environmental scan uncovered some encouraging findings for the future of sport substance use prevention programs for youth and provides practitioners with preliminary key considerations for program development. These findings can also help prevent duplicated effort across sectors, for example, by ensuring practitioners are not building a new program when one already exists that could meet their needs. This work can inform the development of effective, sustainable substance use prevention programs that are based on evidence and grounded in sound evaluation, and that leverage the sport environment to help youth develop healthy lifestyles free from the use of substances.

Introduction

Adolescence presents a key opportunity for the prevention of substance use. Deterring drug use during this time can lead to a lifelong reduction in problematic substance use (Leyton & Stewart, 2014), as well as significant cost-benefit savings. For instance, analysis of numerous drug use prevention programs has shown that they result in savings of $15–18 on every dollar spent by health agencies on problematic drug use prevention (Sehwan, Coletti, Crutchfield, Williams, & Helper, 1995; Miller & Hendrie, 2008).

Sport presents an optimal opportunity to teach youth healthy choices about substance use. Substance use commonly begins during adolescence (Statistics Canada, 2015) and more than 80% of youth ages 3 to 17 participate in some form of sport (Solutions Research Group, 2014). Furthermore, sport has been shown to relate to positive youth development (Holt, 2008). Sport culture has historically promoted an anti-drug attitude wherein performance enhancing drugs are seen as a form of cheating and the use of recreational drugs are seen as a disservice against an athlete's greatest asset — his or her health (Crabbe, 2000).

Sport encourages athletes to treat their bodies well in terms of nutrition, sleep and abstention from harmful substances to ensure they are in an optimal position to perform their best during competition. Thus, it is not surprising that there are individuals who support the use of sport to prevent the use of substances among youth. To do so, however, requires a better understanding of the relationship between sport and substance use (National Institute on Drug Abuse, 2008; Terry-McElrath, O'Malley, & Johnston, 2011).

Unfortunately, there is a lack of research to show definitively that youth sport programs are an effective means of decreasing substance use among participants. Instead, findings for this relationship are mixed (Moore & Werch, 2005; Lisha & Sussman, 2010; Terry-McElrath et al., 2011; Halldorsson, Thorlindsson, & Sigfusdottir, 2014). For instance, recent quantitative analysis of data from the 2008–2009 cycle of the National Longitudinal Study of Children and Youth examined the relationship between substance use and sport among a sample of 4,271 participants aged 14 to 18. This analysis found that sport participation, in general, was associated with decreased use of marijuana and other drugs, but increased use of alcohol. This work also found that participation in sports in school and sports where a coach was present was associated with less substance use, while out-of-school sport participation was associated with increased marijuana use (Sztainert, 2015).

These inconsistent findings might be due in part to the complexity of measuring sport's effect on substance use. The National Institute on Drug Abuse has stated that there are significant knowledge gaps when attempting to understand the relationship between physical activity and substance use. These gaps include lack of information about how type of sport, amount of time spent participating in sport, context in which one participates (e.g., as a school activity, with or without a coach) and persistence of physical activity might influence substance use (Terry-McElrath et al., 2011).

Research in this area in the Canadian context is lacking on several fronts. There is little or no research illustrating how sport influences substance use among Canadian youth; there is no consistent definition of sport in Canadian data collection; and there is no information about how Canada uses sport as a drug use prevention tool for youth. Furthermore, those working in youth substance use prevention face similar knowledge gaps and inconsistencies in recommended evidence and practice, a lack of understanding and support around successful youth engagement, and a lack of common terminology and language about substance use prevention (Canadian Centre on Substance Abuse, 2015).

When all these factors are taken together, it is clear why there is so much debate over the relationship between sport and substance use, especially with regards to youth. With this topic becoming increasingly relevant in the problematic substance use field, the Canadian Centre on Substance Abuse (CCSA) aimed to address the issue in Canada through interconnected activities of which this scan is one. CCSA outlined two overarching goals to guide these activities:

1. Reduce problematic substance use and related harms among youth who participate in sport; and
2. Leverage sport as a tool to prevent risky substance use and related harms.

CCSA brought together several stakeholders in the field and outlined the main gaps that need to be closed to achieve these goals. To address the gaps, CCSA need to develop a standard definition of sport, assess what data exists in Canada that could be used in this research, and understand the relationship of sport and substance use among youth. Stakeholders also identified the need for an all-encompassing overview of how sport is being used in the field of youth substance use prevention. With this need in mind, CCSA undertook an environmental scan of sport programs designed for youth that incorporated some form of drug education or prevention. The intended audience for this scan includes practitioners working in a youth- or sport-based field who might be interested in developing or incorporating a sport-based prevention program into their organization, as well as researchers in the fields of youth substance use prevention or positive youth development and sport.

Objectives

The objectives of the environmental scan were:

- To review and summarize North American sport programs that contain substance use education;
- To examine whether these sport programs reduce substance use among youth (ages 10 to 24); and
- To summarize lessons learned in this area based on peer-reviewed evaluations, to facilitate the exchange of knowledge within this field and to help program developers shape their own evidence-based community programs or adopt a pre-developed sport program.

Method

The environmental scan included a search of both the peer reviewed literature and grey literatures related to the topic. Researchers also sent an information request to relevant organizations and a posting to the Canadian Sport and Youth Substance Abuse Prevention LinkedIn group (see Appendix A for text).

Researchers conducted a search of the literature that highlighted youth sport programs that include substance use education. To be included, the programs had:

- To be sport-based (team or individual) or targeted at athletes;
- To include information or education on alcohol, tobacco or other drugs (e.g., street drugs, prescription drugs, or appearance or performance enhancing drugs);
- To aim to prevent or delay substance use or reduce the harms associated with it;
- To target young people aged 10 to 24;
- To be delivered at either a primary or secondary intervention level;[1]
- To be located in Canada or elsewhere in the Western world; and
- To be provided in English or French or both.

If the inclusion criteria were met, the scan prioritized peer reviewed literature that included an evaluation of a program. Grey literature was included if the resource provided the program objectives and program description.

The PubMed and PsycINFO databases were searched. Other sources included Google Scholar and Google. Search terms used were a variation of the terms Drug Education, Drug Abuse Prevention, Alcohol Use, Alcohol Rehabilitation, Harm Reduction, Performance Enhancing Drugs, Steroids, Athletes, Clubs and Social Organizations, and specific sports such as hockey, baseball, football, basketball, tennis, swimming, and martial arts.

A search was conducted in the grey literature through search engines and focused on organizations that administer sporting programs for youth and that include substance use education. The search produced several programs from organizations such as universities, colleges, high schools, sport-related associations, organizations responsible for regulating sport (e.g., Canadian Centre for Ethics in Sport), Public Safety Canada, and agencies in other countries such as the Substance Abuse and Mental Health Services Administration in the United States (see Appendix B for search strategy).

Over 100 Canadian organizations and agencies were contacted via email for their input into the scan. They were given the scan criteria listed above and asked to identify any relevant resources. Those contacted included CCSA partners in the Youth and Sport project such as Canadian Centre for Ethics in Sport, Coaches Association of Canada and the Joint Consortium for School Health, as well as universities (e.g., Dalhousie), and federal and provincial health services (e.g., Health Canada). Others contacted included addictions services, Canadian sport authorities (e.g., Skate Canada), foundations and charities focused on sport, recreation and health (e.g., Right to Play, Canadian Parks and Recreation Foundation), youth-focused or youth-based organizations (e.g., Sandbox Project) and enforcement agencies (e.g., RCMP). Similarly, members of the LinkedIn group

[1] Tertiary programs, designed to treat problematic substance use, were not addressed in this scan.

represented organizations such as Canadian Centre for Ethics in Sport, Coaches Association of Canada, Sport Matters, Sport Canada and other health and recreation organizations.

Approximately 30 programs were identified in the grey literature and over 50 peer-reviewed articles were considered for inclusion in the scan. These resources were categorized based on the applicability to them of the inclusion criteria and discarded if deemed irrelevant. The remaining resources and articles were organized by program type: peer-to-peer, education-based, social norming, screening and consultation, providing access to sport and multilevel. In total, 12 programs that have been evaluated for effectiveness and 14 programs that appeared in the grey literature were included in the scan and summarized below. Efforts were made to report all available information about the reported programs, including program title, level of prevention (i.e., primary or secondary), objectives, theoretical grounding, components and strategies, description of content (e.g., structure and curriculum), effectiveness (evaluation) and lessons learned. Any information missing from a program summary was not available at the time of the scan. All peer reviewed programs contained an evaluation, while only one program identified in the grey literature included an evaluation (a participant feedback survey). Given this fact, the Lessons Learned section is based only on the results of the peer-reviewed program evaluations.

Results: Summary of Programs

This section summarizes programs identified from the scan that are based in sport and contain substance use education. They have been organized according to type of program (i.e., peer-to-peer, education-based, social norming, screening, consultation and counselling, access to sport and multilevel). A brief overview of these program types and their theoretical basis is provided in each section. Not all programs included in the scan were evaluated. Of the programs that were evaluated, only significant results are reported. This scan does not attempt to assess or comment on the soundness of the program development or validity of the program components, such as its theoretical underpinnings. Instead, the scan reports only on the program description and evaluation results, if provided. The evaluation results (i.e., peer-reviewed findings) form the Lessons Learned following this section.

Peer-to-Peer Programs

Youth spend more time with their peers than any other group. Thus, it is not surprising that programs delivered by peers are effective in behaviour change among this group and that many studies have illustrated that peer-to-peer program administration is effective in reducing risky behaviour (Massey & Neidigh, 1990). For example, a review of studies of the effectiveness of peer-to-peer programs found that they led to improved reproductive and sexual health, reduced risky sexual behaviours, increased testing for sexually transmitted diseases, reduced risky behaviours such as criminal activity or riding with an impaired driver, and improvements in employment attainment and school attendance. Most importantly, the review found that peer-to-peer programming led to a reduction in the use of substances such as alcohol, marijuana, cigarettes, anabolic steroids, diet pills and injection drugs (Advocates for Youth, n.d.).

Social Learning Theory, which places an individual's social environment as the prime influencer of his or her behaviour, is the basis for these program types (Bandura, 1977).[2] Social influences are central and powerful factors that promote experimentation or initiation of substance use (Griffin & Botvin, 2010), especially in regards to modelling of important others (e.g., teammates), and portrayal of use in the media (e.g., famous athletes) (Mayberry, Espelage, & Koenig, 2009; Villani, 2001; Tye Warner, & Glantz, 1987).

The following subsections describe and discuss primary drug prevention programs targeted at young athletes that use peer-to-peer administration. The goal of primary prevention is to educate the audience on the particular harms of a behaviour on health and well-being (Martin & Thrasher, 1989). These programs are mainly designed to influence those who have not had an issue with substances or are in the very early stages of substance use, and are meant to alter attitudes and beliefs about the behaviour (Bloch & Ungerleider, 1988; Burns, 1989).

Athletes Targeting Health Exercise and Nutrition Alternative

Objectives

The Athletes Targeting Health Exercise and Nutrition Alternative (ATHENA) program aims to decrease disordered eating habits and reduce use of appearance altering drugs (i.e., body shaping) among adolescent female athletes. The program aims to replace harmful behaviours with healthy nutritional habits, and exercise and training (Elliot et al., 2004).

[2] All theories listed in this scan can be found in Appendix C.

Theory and Program Components

- Theory of Planned Behaviour
- Cognitive Social Theory
- Theory of Constructivism
- Health Belief Model
- Alternatives to behaviour

Program Description

The ATHENA program is integrated into a team's usual practice activities. The program consists of eight classroom sessions that are 45 minutes in length. A majority of lessons and activities are delivered by student leaders to groups of six students. Peer leaders are given program delivery training prior to facilitating the groups. The team's coach also plays the role of facilitator, but the program is mainly peer led. Students are given small diaries with accompanying guidebooks to help them track their diet (e.g., protein and calcium intake), daily mood and activities.

The curriculum used for the classes covers gender-specific correlates of drug use and disordered eating behaviours, risk factors related to intentions toward health harming practices, consequences of substance use and benefits of nutrition and exercise, cognitive exercises to decrease depression, the countering media influences, teaching of refusal skills, and setting health goals.

Effectiveness

Elliot et al. (2004)

Study design: Elliot et al., conducted a randomized control trial using 18 high schools in Oregon and Washington. Those selected to participate in the study partook in either the ATHENA intervention or were part of a "usual care" control group who were offered pamphlets that provided information on disordered eating, drug use and sports nutrition.

Measures: Participants were assessed through a confidential questionnaire prior to and after their sport season. The questionnaire asked students about their intent to behave in a certain manner (mainly, use drugs), their knowledge of the topic, influences of their behaviours (e.g., media) and about their overall health habits.

Outcome: The study found that those who participated in the program had less recent diet pill use at the three-month follow up, and there were fewer new users of diet pills and other body-shaping substances (e.g., steroid, supplements for muscle building). Those who participated were also less likely to ride with a driver who had consumed alcohol and had less intention to use diet pills and creatine. Participants did not have less intention of using alcohol or marijuana. The participants also had an increase in their understanding and retention of the effects of anabolic steroid and the harming consequences of alcohol on one's athletic performance. The students also expressed that they had greater confidence and ability in turning down offers to engage in drug use.

Ranby et al. (2009)

Study design: Similar to Elliot et al. (2004), 18 schools participated, with each experimental group being given the ATHENA program and paired with a control group who only received an information pamphlet about eating disorders and healthy habits. Contrary to the Elliot et al. (2004) study, Ranby et al. (2009) also aimed to understand which of the constructs altered by the ATHENA program (e.g., resistance to media messages) were responsible for change in intention to engage in unhealthy weight loss and intention to use performance enhancing substances, especially in the long term.

Measures: Participants were given a pre-assessment survey before they began ATHENA, a follow-up survey two weeks after they finished their three- to four-month-long sports season and a nine-month post-follow-up. The assessments consisted of 15 items that covered knowledge, norms, beliefs, intentions and behaviours regarding drug use, nutrition and health. The surveys included questions on media such as magazine ads and the role of coaches in health decisions.

Outcome: ATHENA did not have an effect on unhealthy weight loss or use of appearance and performance enhancing drugs (APEDs) at the nine-month follow-up. The program did successfully change the knowledge, norms, and mood management and outcome expectancies for risky behaviours and self-efficacy of participants. This change resulted in positive change in intentions to lose weight in an unhealthy manner or improve athletic performance through the use of substances that were associated with behaviour change. In other words, the program was able to influence certain mediators for the behaviour in question, which resulted in more positive health choices by the participants. This change in intentions lasted the entire nine months and resulted in favourable behaviour change (i.e., participants were less likely to engage in unhealthy weight loss or APEDs use). The authors found that the program had no effect on peer norms or the participant's ability to resist unhealthy weight loss practices.

Lessons Learned

The two studies found some contradictory results with some similar findings. The program provided participants with alternatives to unhealthy choices, thereby altering behaviour in a positive manner, but did not necessarily consistently result in a decrease of diet pill use or unhealthy diet habits. Elliot et al. (2004) concluded that team sports are an effective means for positively altering adolescent female athlete behaviour, including substance use. Ranby et al. (2009) suggested future programs should aim to deconstruct media content that leads to unrealistic body perceptions of young women, and pair nutritional and sport performance information with strategies to alter behaviour for the better.

Athletes Training and Learning to Avoid Steroids

Objectives

The Athletes Training and Learning to Avoid Steroids (ATLAS) program aims to decrease alcohol and substance use, mainly APEDs use among male athletes (Fritz et al., 2005). MacKinnon et al. (2001) described the program's goal as to "prevent anabolic androgenic steroid (AAS) use by reducing intention to use AAS and teaching adolescents about two alternatives to enhance strength and physical performance — improved nutrition and appropriate strength training" (p. 16). Also, the program aims to change norms about drug use, increase awareness of disapproval of drug use and improve refusal skills (MacKinnon et al., 2001).

Theory and Program Components

- Social Learning Theory
- Health Belief Model
- Theory of Planned Behaviour
- Theory of Constructivism
- Alternative to behaviour
- Parental involvement

Program Description

The ATLAS program can be delivered in various formats. In general, the program comprises seven to ten lessons delivered once a week during a team's light practice session. The coaches are mainly responsible for the overall facilitation of the program, but 60% of the program is delivered by the squad leaders to small groups of their teammates. The lessons include activities such as role playing, developing public service announcements (PSAs) and interactive games. Students learn about risk factors for steroid use, setting both athletic and nutritional goals, drug refusal techniques, monitoring their nutrition, and making healthy choices (e.g., strength training alternatives). Some programs include the provision of a nutritional guide and meal plans to students.

Some program variations include accompanying weight room sessions delivered by trained researchers and a parental component wherein parents receive a nutritional booklet, are informed about the program goals and have an opportunity to ask questions of the program facilitators (Goldberg et al., 1996a).

Effectiveness

Goldberg et al. (1996a)

Study design: Seventeen schools were randomly assigned to participate in the ATLAS program and 17 other schools were assigned as control groups. The study used the extended form of the ATLAS program, where educational sessions, weight training and parental sessions were provided. The control group was given a standard commercially produced pamphlet that covered the negative effects of AAS use, the ethics of fair play and sportsmanship. No other steroid education was provided.

Measures: Participants were assessed before they participated in the program, ten weeks after the final ATLAS class and one year after their initial assessment. Assessment included questions about AAS and other drug use, knowledge, attitudes and intent toward drug use, nutrition and exercise knowledge, perceived drug use norms, and other topics such as body image and media influence.

Outcomes: The ATLAS program led to several beneficial outcomes for program participants; these included less short-term and long-term intent to use AAS, improved nutrition and fitness behaviours, increased knowledge of the consequences of substance use, belief that figures of authority were less tolerant of substance use and lowered tolerance of peer substance use.

Goldberg et al. (1996b)

Study design: Through a non-randomized controlled trial the ATLAS program was delivered to two urban high schools with 56 male adolescent football players participating in the program and 24 students acting as a control group who received no education on steroids, nutrition or fitness. To ensure controls did not receive any of this education, post-intervention verification was conducted through interviews with coaches at control schools.

Measures: Participants were given a questionnaire before they participated in the program and post-program participation (the week of the final ATLAS class) assessed their attitudes toward and intent to use steroids and other drugs, as well as knowledge of drug effects and their thoughts about diet and exercise.

Outcomes: The authors found that those who participated in ATLAS were less interested in trying steroids and had a stronger belief in the dangers of the drug. They also had a better knowledge of the alternatives to steroid use and improved images of their bodies.

Fritz et al. (2005)

Study design: Mediation analysis was used to measure whether a participant's background before program participation affects the program's effectiveness. The study included 3,207 male high school football players from 34 schools. Schools were randomly assigned to the ATLAS program or the control program, which consisted of a pamphlet outlining the dangers of steroid use, the need for a balanced diet and information on strength training.

Measures: Students were assessed at the beginning of the football season (i.e., before program participation), at the end of the football season (after program completion) and one year following the program. The assessment included measures of student beliefs (e.g., perceived severity of AAS, perceived susceptibility to AAS effects), knowledge of AAS effects and AAS norms (e.g., perceived coach and peer tolerance).

Outcome: Regardless of a participant's demographic and experiential background before partaking in the ATLAS program, the effects of the program were found to be beneficial; the program does not need to target only certain type of youths (e.g., high socioeconomic status), but can be applied across groups. That being said, it was found that the program was more effective for participants who had lower knowledge of AAS harms and nutritional alternatives and for those who had higher intentions to use AAS at the baseline survey (Fritz et al., 2005).

MacKinnon et al., 2001

Study design: Mediation analysis was used to investigate the mediating mechanisms responsible for ATLAS program effectiveness. Fifteen of 31 high school football teams (1,506 players) in Oregon and Washington were assigned to receive the intervention, and the remaining were given pamphlets about steroid use as controls.

Measures: Participants were assessed on their beliefs, knowledge, norms and resistance skills related to the use of AAS. They were assessed prior to the football season, once the season finished and one year after they had participated in the program.

Outcome: The authors found that the value a participant placed on their team as a good source of information increased the magnitude of the beneficial effects of the program. The knowledge about AAS effects and severity provided by the program to participants resulted in a reduction of intentions to use these types of drugs.

Lessons Learned

Overall, Goldberg has found that the ATLAS program is an effective vehicle for teaching about AAS use and decreasing the intention to use it in the short term and partial long term (Goldberg et al., 1996a). ATLAS can be implemented universally because it is equally effective for all program participants, regardless of how they score on assessments given before program participation (Fritz et al., 2005). The evaluation of this program by MacKinnon et al. (2001) illustrated that the team acts as an influential source of information for athletes, and if norms held by athletes can be altered such that they are more realistic, this can result in positive behaviour change.

Champions Cross Mentoring Program

Manitoba High Schools Athletic Association

Objectives

This program aims to prevent substance abuse by linking students with positive peer role models who promote a substance-free lifestyle. Its goal is for senior high school student leaders to come into

the classroom and educate fifth grade students about peer pressure and how this can affect decisions. The program helps both high school and elementary students to learn important life skills, such as coping mechanisms and being a role model.

Program Description

The premise is that high school students have as much of an impact on younger students as professional athletes and the younger students can relate to them. Approximately 100 student leaders participate in a yearly two-day cross-mentoring workshop. The workshops include guest speakers from organizations such as the RCMP, the Behavioural Health Foundation, the University of Manitoba and schools. These workshops teach the youth how to teach others as well as educate them on the consequences of drug use in sport. Student leaders then speak to elementary students five times within three months on topics such as peer pressure, communication skills, and drugs and alcohol through skits, icebreakers and lesson plans. The student leaders must pledge to be substance free for the three to four months they are participating in the program (Manitoba High Schools Athletic Association, n.d.).

There was no evaluation available for this program.

Succeed Clean

Canadian Centre for Ethics in Sport, University of Waterloo, Wilfred Laurier University, Waterloo Regional Police Services and Kitchener Rangers Hockey Team

Objectives

Succeed Clean was designed to reduce the use of APEDs among young athletes through education and information about these substances disseminated to children, youth, parents, educators and coaches. The goal is to educate young people so they can make healthy choices and reach their athletic goals without relying on APEDs.

Program Description

The first component of the Succeed Clean program is the peer-to-peer learning administered by university students from the participating university and presented by athletes from the Rangers hockey team to high school and middle school students. Second, facilitator-led community meetings are held with influential adults and stakeholders such as coaches, parents and teachers to discuss the issue in an open environment. The program content includes evidence-informed information on steroids, supplements, stimulants and nutrition, discussion of issues such as peer pressure and cheating, personal accounts from the athletes about their experiences and interactive components such as videos about APEDs (Canadian Centre for Ethics in Sport, 2013).

Survey Results

A survey of 615 program participants immediately after they participated in the Succeed Clean program found that the presentations increased student's understanding of the risks of APEDs and their knowledge about healthy ways to improve athletic ability, and they were less willing to try APEDs. Students liked best that they were learning new information, the personal stories of the presenters and the interactive components such as videos (Social Innovation Research Group, 2013).

Project Defence: Western Hockey League Kootenay Ice

Objectives

The objectives of Project Defence are to educate teen athletes about peer pressure and drug use, and provide these athletes with mentorship opportunities to translate this education to youth within the community.

Program Description

Young athletes (ages 17–20) from the hockey team are given a presentation by law enforcement officers about important issues such as self-esteem, the importance of role models, and drug use and addiction. Afterwards four or five players are selected to act as role models among their team and for community youth. These role models do 20 hours of training and practice in delivering drug use prevention messages. The athletes visit classrooms of Grade 4 students and provide education about drug use and peer pressure for 30–45 minutes (A. Nutini, personal communication, July 8, 2015).

There was no evaluation available for this program.

Varsity Athletes against Substance Abuse

Rhode Island Student Association Services

Objectives

The objective of the Varsity Athletes against Substance Abuse is to promote social norms of sobriety among student athletes.

Program Description

Participating athletes are required to pledge sobriety for one year to foster the normalization of substance use abstinence among their peers. The program is peer-to-peer with older students acting as role models to the younger students. High school aged teens are trained in the negative effects of alcohol and other drugs on the brain and body and present this information to elementary and middle school students (Corrigan, 2011).

There was no evaluation available for this program.

Summary

The scan produced detailed information and evaluations of some peer-to-peer programs, mainly the ATHENA and ATLAS programs. These programs have been tested for effectiveness in more than one setting and consistently appear to improve the participant's knowledge about AAS and diet pills, and in turn decrease the intentions of young people to use these types of drugs or engage in unsafe dieting. Studies whose follow-up windows were shorter than others found more favourable results, such as a decrease in diet pill use and increase in the ability to refuse AAS use. The same was not found for alcohol and marijuana, but the knowledge of the negative effects of all drugs did increase.

Peer-to-peer programs, which have been implemented in many age groups from elementary school to university and in different sport environments, appear to effectively engage participants and result in less intention to use substances and more inclination to adopt healthier habits such as eating well and exercise. These studies highlight the need to provide healthy alternatives in substance use prevention efforts and point to the value of a sport team in acting as a source of information and instilling behaviour change throughout the peer group.

Education Programs

There are a number of ways in which education programs can attempt to inform youth about the dangers of substance use: through factual information, by emphasizing the harms of substance use (i.e., "scare tactics") and by providing youth with alternative behaviours. Scare tactics — using images or information to shock or scare youth from wanting to use a substance — have not proven to be an effective means of prevention. For instance, Goldberg, Bents, Bosworth, Trevisan, & Elliot (1991) assessed the effectiveness of scare tactics in affecting opinions about anabolic steroid use among nine football teams. The scare tactics were deemed overstated by participants and factual information that gave a knowledge base for decision making was the preferred intervention.

Research shows that knowing the adverse consequences of substance use will greatly affect whether a youth experiments with drugs, a concept captured by the Theory of Planned Behaviour (Ajzen, 2012), which predicts that teaching youth about the consequences of risky behaviour can be beneficial. In addition, the inclusion of an alternative strategy to the negative behaviour will lead to a greater likelihood of behaviour change in the individual (Wundersitz, Hutchinson, & Woolley, 2010). As supported by the Health Belief Model and the Integrative Behaviour-Image Model, it is important for a prevention program to not only educate youth on the dangers of engaging in a particular behaviour, but also to give youth a realistic alternative to this behaviour. For instance, programs that teach youth about the negative effects of substances on physical performance should include other health promoting strategies to improve their physical performance such as getting enough rest and eating well.

The following subsections describe and discuss primary prevention programs that provided substance abuse education, including the effects of substance use on the athlete, as well as alternatives to the behaviour.

Anabolic Steroid Education Intervention

Objectives

The objectives of the Anabolic Steroid Education Intervention program are to change knowledge and attitudes among high school athletes about steroid use.

Theory and Program Components

- Theory of Planned Behaviour
- Provision of evidence-based information on effects of drug use

Program Description

The content for this education program was based on the American College of Sports Medicine's position on the use of steroids (anabolic and androgenic) in sport. This position recognizes the positive and negative aspects of steroid use, including increased strength and muscle size, and premature cardiovascular disease, sterility and psychological changes (American College of Sports Medicine, 1987). The intervention consisted of a 20-minute oral presentation of the College's position in lay terms, as well as a four page handout covering the same material. There was also a short question and answer period at the end of the session (Goldberg, Bosworth, Bents, & Trevisan, 1990).

Effectiveness

Goldberg et al. (1990)

Study design: This study used six varsity high school football teams as their experimental groups. Two teams were given the full intervention (i.e., the oral presentation, the handout and the Q and A portion), two teams were given the handout only, and two teams acted as controls and did not receive any intervention. A total of 105 athletes were included in the study.

Measures: All athletes completed a confidential questionnaire before they participated in any type of intervention. The questionnaire included questions about the availability of steroids and their knowledge and attitudes about the drugs, including positive and negative effects of use. An identical questionnaire was administered to the athletes two weeks later.

Outcome: The groups who were administered the intervention, whether it was the presentation and handout or only the handout, exhibited increased awareness of the adverse effects of steroids, but these interventions did not alter attitudes about the drugs, a crucial component of behaviour change. The authors note that those who participated in the study scored low as to their likelihood of using steroids at the outset of the study, as well as quite a low rate of current steroid use, which possibly contributing to these findings.

Lessons Learned

This form of education did not result in an attitude change among participants, which could be related to the already established attitudes and behaviours of the participants coming in to the study or to inadequate program content. The authors state that, "It may take more in-depth exposure to the risks and complications of anabolic agents to alter the attitudes of adolescents. Broad-based education interventions should be designed for the younger athlete with the help of coaches, trainers, and other professionals. Formal classes and open discussions to reinforce the unfavorable aspects of these and other illicit agents may be necessary if we are to prevent late use of such drugs" (Goldberg et al., 1990, p. 213).

Steroid and Nutrition Education Program

Objectives

The objectives of the Steroid and Nutrition Education Program are to increase preadolescent's knowledge about the effects of anabolic steroids and alter attitudes toward the drug to decrease the likelihood of use.

Theory and Program Components

- Theory of Planned Behaviour
- Integrative Behaviour-Image Model
- Drug use education

Program Description

This education program was delivered three times a week after school to male wrestlers in grades 4 through 6 in a rural area. There were six sessions, each lasting 30 minutes. These sessions included education covering proper weight training techniques, nutritional information designed for athletes, social decision-making (e.g., self-control), self-esteem training, and the physiological and psychological effects of anabolic steroids (Trenhaile, Choi, Proctor, & Work, 1998).

Effectiveness

Trenhaile et al. (1998)

Study design: The study authors used an experimental pre-test/post-test control group design. Study participants were chosen from a rural school district and had to be of preadolescent age (nine to twelve years old), male, and participated in wrestling. Thirty-nine students chose to participate in the study, 15 who were administered the program and 17 who did not receive the program.

Measures: The Anabolic Steroid Questionnaire and the Drug Abuse Resistance Education (D.A.R.E.) Questionnaire were administered to each group by their teachers shortly after the wrestling season began. On the last day of the intervention both groups were give these questionnaires again.

Outcome: Those who participated in the education program had improved anabolic steroid knowledge when compared to those who did not participate. This group also experienced positive change in their overall attitudes toward steroids; that is, they were less likely to use them.

Lessons Learned

The study authors recommend that prevention should start at an early age in grade school and continue into high school, as well as remain consistent and of be of considerable duration. They found that when providing education on drug use, pairing alternative behaviour to this use results in a decrease in intentions to use. Overall, the students expressed less interest in the program content related to self-esteem and social decision making, but saw value in learning about the negative effects of steroids as well as the nutrition and weight training information (Trenhaile et al., 1998).

Canadian Lacrosse Association Online Education Program

Objectives

The objectives of the Canadian Lacrosse Association Online Education Program are to educate and equip Canadian lacrosse athletes with knowledge and resources in anti-doping and knowledge of the Canadian Centre for Ethics in Sport anti-doping and testing procedures in order to preserve the core values of the sport. This course is mandatory for all lacrosse athletes at a certain level.

Program Description

The course is administered online through the Canadian Lacrosse Association website. There are seven modules for the athletes to complete covering topics such as information on the Canadian Anti-Doping Program, requirements of athletes to ensure they remain drug free, the sample collection process for drug testing, rights and responsibilities of athletes during testing, the list of prohibited and banned substances and the importance of checking their medications (Canadian Lacrosse Association, 2016).

There was no evaluation available for this project.

True Sport Clean 101

Canadian Centre on Ethics in Sport

Objectives

This e-Learning course was designed for all team or sport organizations (e.g., Pan Am Games, Commonwealth Games) to educate athletes on the values of sport, as well as provide information on the Canadian Anti-Doping Program.

Program Description

The course covers the True Sport Principles, athlete rights and responsibilities, banned substances and methods of drug use, procedures for sample collection (i.e., drug testing) and the Whereabouts Program (T. Laforce, personal communication, July 20, 2015).

There was no evaluation available for this program.

Make the Call

Canadian Centre on Ethics in Sport

Objectives

This online course provides unbiased information about substances, supplements and drugs for young athletes. The program mainly targets youth who fall under the "train to compete" category (15 to 23 years of age).

Program Description

The curriculum includes effects of substances on the body and the risk and mitigation factors of use, as well as a social and ethical values-based framework to help guide decision-making about drug use (T. Laforce, personal communication, July 20, 2015).

There was no evaluation available for this program.

Summary

Education programs that only provide information related to the negative effects on drugs, although useful to the athlete, might not be substantial enough to result in behaviour change. Including information on alternatives to substance use, such as weight training or eating well, will decrease participant's intentions to use drugs. Similarly, this education must be administered in a timely manner and should not be perceived as brief. It will be more effective if the information is disseminated through more than one avenue, such as parents, friends and teachers. The effectiveness of a multifaceted approach to program delivery such as this has been supported in prevention literature (Cuijpers, 2003).

Social Norming

Another effective method for educating youth about drugs is to correct the social norms or exaggerated beliefs held by youth about the frequency and patterns of drug use, and attitudes of their peer's towards substance use. As supported by Social Norms Theory, many young people think that their peers use substances at a much higher rate than they actually do (Steyl & Phillips, 2011; Jones, Oeltmann, Wilson, Brener, & Hill, 2001) or that their peers accept the use of drugs more than they do themselves (McAlaney et al., 2015). For instance, the 2013 National College Health Assessment Survey, which is drawn from a convenience sample of 32 post-secondary institutions, asked students how much marijuana was used by their peers. They estimated that 7.2% of their peers had never used it, 9% had used it, but not in the past 30 days, and 83.8% had used it in the last 30 days. In reality, 60.1% of their peers had never used cannabis, 23.8% had used cannabis, but not in the past 30 days, and only 16% had used cannabis sometime in the past 30 days (American College Health Association, 2013).

If drug education can challenge young peoples' perceived social norms by including statistics proving their perceptions are false, the education might have a more substantial impact on the audience.

Overall, research supports that addressing passive social pressures, such as those conveyed by peer norms, through prevention initiatives will lead to a change in drug use attitudes and behaviour.

The primary prevention programs summarized below all incorporate a social norming component with the goal of altering perceptions of norms among youth athletes to prevent or decrease substance use.

eCHECK UP TO GO Web-based Intervention (formerly eCHUG)

Objectives

This program aims to "reduce levels of dangerous and destructive drinking on college campuses with a special focus on two high-risk groups: First-Year Students & Athletes." The program is also designed to strengthen the campus culture of health and safety by reducing harms and providing customized links and information about campus and local community resources (San Diego State University Research Foundation, 2009).

Theory and Program Components

- Social Norms Theory
- Personalized feedback
- Web-based intervention

Program Description

This evidence-based normative feedback program focused on alcohol use[3] was developed by psychologists at the San Diego State University. Through a subscription to this program, colleges and universities are provided with an online intervention that is tailored to their campus's social norms, resources, health and wellness goals, and programs and departments. As students are completing the intervention, they are provided with personalized feedback about their individual drinking patterns, the health and personal consequences related to their individual choices, and their family risk factors.

The program is 30 minutes long and collects data on the student's demographics and his or her drinking patterns. Using this data, the program will compare a student's drinking patterns to national data for his or her age range and provide the participant with an estimate of negative consequences related to his or her drinking, risk for developing problematic substance use, genetic risks, past year financial cost of his or her drinking, his or her perceptions of normative use compared to actual use, and referral to a local substance use agency if an issue is identified.

Effectiveness

Doumas, Haustveit, and Coll (2010)

Study design: One hundred and eleven student athletes were recruited through a first-year athletic department seminar to participate in the study. Athletes were randomly assigned to either the eCHUG program or the control program, which consisted of an educational website about alcohol.

Measures: Participants completed a baseline questionnaire before they participated in the online intervention (the first week of September) and a three-month follow up questionnaire (the first week of December). The questionnaires asked students about their alcohol consumption (i.e., quantity, frequency of intoxication, peak consumption and frequency of binge drinking). This information was

[3] There is also a program designed for marijuana use.

used to determine if they were a high- or low-risk drinker. They were also tested on their perceptions of peer drinking.

Outcomes: Athletes classified as high-risk drinkers significantly reduced their drinking after the intervention when compared to the control group. There were no differences in the low-risk drinkers. For instance, weekly drinking decreased 46%[4] for the high-risk drinkers in the intervention group and increased 21% for the high-risk drinkers in the comparison group. Similarly, high-risk participants in the intervention group decreased their drinking to intoxication by 46% whereas this behaviour increased 6% for the high-risk drinkers in the control group. In terms of participants' perceptions of typical peer athlete drinking behaviour, high-risk students in the intervention group reduced their perceptions of this behaviour in peers by 15%, whereas this perception increased 96% for the comparison students.

Lessons Learned

Overall, the authors classified this intervention as effective. Their results showed there could be a relationship between knowledge of realistic, normative peer drinking behaviours and reducing one's drinking habits. This program could be applicable outside the university environment and the feedback from participation could be useful in treatment of substance use issues for athletes, especially those who are high-risk drinkers.

Campus-wide Education on Student Drinking Norms

Objectives

The objective of this initiative is to educate the general student population as well at student-athletes about accurate campus drinking norms.

Theory and Program Components

- Social Norms Theory
- Multi-pronged promotional materials

Program Description

To educate the campus population about the reality of their peer's drinking behaviour, data is collected among this population to formulate key messages based on actual campus statistics. These messages are then used to develop several types of promotional material that are designed to target the student population and inform them in an effective manner. For instance, dissemination techniques could include campus newspaper advertisements, signs displayed in and on public transportation, poster displays in high-traffic areas such as the cafeteria, table tents in dining areas, athletic department promotional materials, and mass mailings including email. Images are rotated and monitored to ensure maximum exposure to the target group. An example of this type of promotional material could include a poster with a photo of an attractive student and vivid colors stating "Thinking About Your Drinking?" followed by a brief factual message, such as "68% of students at this university have four or fewer drinks when they party" (Thombs & Hamilton, 2002). Materials are also developed to target student athletes.

[4] All reported relationships are statistically significant.

Effectiveness

Thombs and Hamilton (2002)

Study design: This study was non-experimental in nature and assessed the effects of a social norm feedback campaign on the perceived drinking norms and drinking behaviour of Division I student-athletes after program implementation. Across three universities, 817 student athletes were surveyed, with 67% to 84% of university coverage achieved. Students were divided based on exposure to the campaign. Exposure was identified by assessing student's recognition of campaign materials.

Measures: This study did not administer a baseline assessment. Participants were assessed 18 months after the intervention had been launched on campus. Student athletes filled out an anonymous survey that asked about their weight, gender and number of drinks consumed at one point and over how many hours (to calculate blood alcohol concentration [BAC]), number of drinks consumed in the last two weeks, number of alcohol consequences (e.g., hangover) over the past 30 days, binge drinking occurrences (i.e., five or more drinks in one occasion for males and four or more drinks in one occasion for females), drinking onset and perception of peer drinking norms.

Outcomes: Athletes who were exposed to the campaign perceived less alcohol use among peers in their campus environment, but the campaign did not affect their perception of alcohol use by close friends. The campaign also did not affect student drinking behaviours.

Perkins and Craig (2006)

Study design: This study was a longitudinal study of simultaneous strategies designed to communicate accurate norms about student-athlete drinking behaviour, including facts and statistics about the school's athletes.

Measures: Participating athletes were surveyed pre-intervention, one year after the intervention and two years after the intervention. The computer-based survey covered their frequency of alcohol use, perceived frequency of peer alcohol use, negative consequences experienced due to alcohol (e.g., fighting), length of time in the sport program, number of best friends in the program, and exposure to project initiatives after the intervention.

Outcomes: Before exposure to the campaign, athletes over-estimated the frequency in which other student-athletes and their friends used alcohol. Once they had been exposed to the campaign, this perception decreased; for instance, the perception team members drink more than once a week was cut in half after program exposure. Encouragingly, the program appeared to result in a decline in participant risky drinking behaviours among the student athletes. For example, drinking two times a week or more was cut in half, BAC levels decreased, and the experience of negative consequences decreased as well.

Lessons Learned

Social norm feedback campaigns can effectively alter most perceptions of campus drinking norms in student-athletes, but might not result in behaviour change. More generalized campaigns might not be effective as most campuses commonly contain a number of different social networks, each with their own social and drinking norms. This fact might be a limitation to a campus-wide general norming campaign: because it is not targeted to one specific subgroup, it might not be effective for all students, especially in regards to their closest friends (Thombs & Hamilton, 2002).

The social norming campaign conducted by Perkins and Craig (2006), on the other hand, was more targeted in nature (i.e., towards athletes only) and delivered to a student population in which a

majority were involved in athletics. This targeting proved effective in behaviour change and in altering beliefs of alcohol norms among peers.

Summary

Prevention methods such as targeted feedback and social norming campaigns can be effective if they are designed to reach target populations. It was found that the personalized feedback campaign was more effective on students who were high risk drinkers (i.e., already partook in the behaviour more so than their peers). It appeared that learning that their peers did not drink as much as they did led to a reduction in their own drinking behaviour as well as their perception of other's drinking. Similarly, norming campaigns work well on targeted groups as opposed to attempting to affect an entire campus as a whole.

Screening, Consultation and Counselling

Some prevention efforts incorporate interactive components where participants receive assessment and treatment plans for possible or apparent use of substances. These programs work to identify current risk of drug use and direct participants to the resources that will address these issues, ideally resulting in a cessation of these behaviours or a reduction in risk. As Martin and Thrasher (1989) state, these initiatives look for the source of the problem and provide an opportunity to develop strategies to reduce substance use in the future. These programs can incorporate practices to screen for the physical effects of drugs and subsequently offer targeted feedback, consultation and counselling about the youth's current state of health and what they can do to improve their health.

There were several secondary prevention programs identified by the scan. Secondary prevention efforts focus on those who are especially at risk for dangerous behaviours such as drug use, and aim to reduce this risk as well as instill protective factors that will last in the long term (CCSA, 2015). These programs are used as an opportunity to provide personalized feedback designed to help the participant cease use.

Smokeless Tobacco Cessation Intervention

Objectives

This team-based intervention aims to reduce or prevent the use of smokeless tobacco among male athletes.

Theory and Program Components

- Cognitive Social Learning Theory
- Diffusion of innovations theory

Program Description

This program type appeared more than once in the literature with slight variations in the design. The following program components were the most common:

1. **Peer involvement:** This involvement included an educational team meeting led by peers (e.g., video presentation on the dangers of smokeless tobacco followed by a group discussion), using team members to help inform program development and involvement of non-smoking team mates to encourage other team members to quit.

2. **Oral screening for each player:** The cornerstone of this program is the involvement of dental care professionals. Each program has dentists or hygienists come in to the school to give an oral screening to team members to identify any health concerns that could be evident from smokeless tobacco use. In certain cases, this visit included the healthcare provider giving a short educational presentation that could include showing the youth examples of other athletes who had major oral health problems with graphic pictures of these athletes' screenings.
3. **Quitting plan:** Healthcare providers also worked with the youth individually to create tangible and realistic cessation plans. This work could include providing a "quitting guide" pamphlet, selecting a quit date and training in the thinking skills needed for quitting.
4. **Follow up:** Some cessation interventions also included administrative follow up where health professionals would contact athletes, inquire as to how their quitting strategies were working and provide further advice.

Effectiveness

Darmody and Erich (1994)

Study design: Darmody and Erich assessed attitudes, knowledge and use of smokeless tobacco among male athletes at a private college. Based on the survey results, they developed the intervention program described above and made it available to all male athletes, encouraging lacrosse and baseball players to attend. 62 athletes attended the educational component (34 of whom had completed the original survey), 12 stayed for an oral screening and one signed up for cessation counselling.

Measures: The baseline survey assessed participant's knowledge of smokeless tobacco harms, and their use and attitudes towards the drug. Those who completed the original survey and attended the program were asked to fill out the original survey again during their first practice after the educational presentation from the dental professional.

Outcomes: This study found that student behaviours, knowledge levels and attitudes towards smokeless tobacco were positively affected by the intervention. The program resulted in an increase of athletes who were willing to quit smokeless tobacco use.

Walsh et al. (1999)

Study design: Walsh et al. (1999) conducted a randomized control trial of California college baseball and football athletes, all of which used smokeless tobacco. There were 171 participants in the intervention group and 189 in the control group - half were from urban and half rural areas. No information was provided regarding the control group program.

Measures: Before the intervention was delivered, both groups were given a baseline survey to measure their smokeless tobacco use and capture demographics. One year after the baseline survey, participants were given a self-administered questionnaire again asking about smokeless tobacco use as well as a saliva test for any participants who reported that they had quit using.

Outcomes: Significant study results showed the quit rate was 34.5% for the intervention group and 15.9% for the non-intervention group. The intervention effectiveness did not vary based on the sport the participant played, and the higher the use of smokeless tobacco the greater the effectiveness of the intervention. Participants expressed the most helpful program components were the oral screening and graphic photos. Of note, some participants attempted to quit smokeless tobacco use by switching to cigarettes.

Walsh et al. (2003)

Study design: Study authors used a cluster-randomized control trials with baseball players from rural California high schools. Of the 44 schools that participated; 22 were given the intervention and 22 acted as the control group. Overall, 1,082 students participated: 141 users and 375 non-users in the intervention group and 166 users and 402 non-users in the control group. The study provided no information about the control group program.

Measures: Before participating in the study, participants completed a survey that asked about their smokeless tobacco use, other substance use, peer and role models, demographics and team mates they admired. They were given a saliva test to ensure they were accurately reporting their smokeless tobacco use. They were also given follow-up questionnaires after the intervention and a one-year follow up that asked about their smokeless tobacco use, quit attempts, discomforts or effects on athletic performance due to quitting, and rating of the intervention.

Outcomes: Authors found that 35% of those who participated in the intervention quit using smokeless tobacco compared to 16% in the control group, a significant difference. The intervention was more effective on participants who had low confidence in their ability to quit than those who had high confidence, and the younger the participant the more likely they were to quit. The intervention had no effect on the initiation of smokeless tobacco use among non-users.

Gansky et al. (2005)

Study design: Using students from 52 California colleges, a stratified, cluster randomized controlled trail was conducted with 883 participants in the intervention and 702 in the control trial. Participants were either users or non-users of smokeless tobacco. The study provided no information about the control group program.

Measures: Before the intervention was administered, participants completed questionnaires based on their demographics, current alcohol and tobacco use, age of initiation, frequency of smokeless tobacco use and quit attempts. One year after the study began, participants were assessed again on their smokeless tobacco use within the past 30 days.

Outcomes: The program resulted in a decrease in the initiation of smokeless tobacco use by 42%, but had no effect on the cessation of use. It was found that those who were less addicted to the substance found greater success in quitting without any help. Interestingly, this study illustrated that when coaches supported cessation there was greater success among teammates.

Lessons Learned

These studies illustrate the effectiveness of personalized feedback and tangible, relatable health consequences paired with the tools and support to quit. Program participants said the oral screening and graphic images were the more helpful components. Program effects varied based on age, other drug use (e.g., cigarettes), addiction level and the participant's confidence in their ability to quit. Overall, the program was considered effective in promoting smokeless tobacco cessation.

Student Athlete Testing Using Random Notification

Objectives

The Student Athlete Testing Using Random Notification (SATURN) program aims to reduce drug and alcohol use among young athletes through a non-punitive, random and suspicion-less drug testing policy.

Theory and Program Components

- Theory of Planned Behaviour
- Randomized drug testing

Program Description

To implement the SATURN program in a school, drug testing must become a mandatory school policy for all athletes participating in school sport programs. There are 15 random testing days per school year, with 30% of athletes being tested at some point in the year. Tests are completed by physicians who follow official protocol and send samples to certified laboratories. If a test is found to be positive, a discussion is had with the athlete's parents, the school principal, a substance abuse councillor and the athlete, who faces a one-game suspension and referral to further treatment, if necessary. If treatment was necessary and the student refused to attend, he or she is barred from any further sport participation.

Effectiveness

Goldberg et al. (2003)

Study design: Two high schools, one with mandatory drug testing consent before sports participation, and a control school that did not have mandatory drug testing participated in the program over one year. The experimental school had 135 students participate and the control had 141. Both athletes and non-athletes participated.

Measures: Surveys were given to all participants the summer before the school year began and at the end of the school year to both athletes and non-athletes. The survey covered topics such as knowledge of consequences of drug use, norms and attitudes of themselves and peers towards drug testing, and use of other substances (e.g., alcohol).

Outcomes: This study found that the group that was subject to random drug testing decreased its use of APEDs and illicit drugs compared to the control group. Conversely, those who had participated in the intervention group had attitudes and risk factors that favoured substance use: they believed less in the negative consequences of substance use, perceived greater peer substance use, and believed peers and those of authority were tolerant of substance use.

Goldberg et al. (2007)

Study design: The study was a prospective randomized controlled trial of a single cohort of students over three years. Five high schools received the intervention and six were given a deferred policy (i.e., acted as a control group), meaning they would not begin the drug testing program until the study was completed. A total of 1,396 students participated.

Measures: Students were assessed at the beginning and the end of the first school year, at the beginning and the end of the second school year, and at the beginning of the third and subsequent school year. The questionnaire was the same as used by Goldberg et al. (2003).

Outcomes: Similar to the previous study, those who were in the intervention group had a decrease in past year illicit drug use and combined drug and alcohol use, but no decrease in past month use. Participants had less positive attitudes toward testing and toward their athletic competence, and believed less that authorities opposed drug use.

Lessons Learned

The drug testing program might have deterred the use of substances among the intervention population, but did not alter their attitudes and beliefs towards drug use in a positive manner. Instead, it led to more favourable attitudes towards substance use and beliefs that drug testing is not effective and there are no benefits to the program. Drug testing programs might have some deterrent effects, but substance abuse mediators appear to worsen over time.

Project SPORT

Objectives

The objectives of Project SPORT are to prevent alcohol use among high-school-aged students, while promoting physical health and activity.

Theory and Program Components

- Integrative Behaviour-Image Model
- Screening and consultation

Program Description

To begin, program participants are given a brief health and fitness screen that covers health-related items such as sport and physical activity, exercise, physical activity norms, nutrition, sleep, and alcohol initiation and use. The primarily yes/no response items help to design tailored feedback for the participant. Next, the participant is given a fitness consultation by a trained fitness specialist based on his or her screen results, which includes tailored advice on activity levels and substance use, emphasizing that drug use conflicts with health goals. Participants are then given a take home fitness "prescription" on nutrition, sleep, substance use and so on. A one-page flyer is also sent to participants one week after the program to reinforce messages.

Effectiveness

Werch et al. (2003)

Study design: This study aimed to understand the effect of the health and fitness screen and brief consultation compared to two other programs: a program that includes the health and fitness screen and brief consultation, as well as an alcohol consultation, and a program that includes all of the above and also print material mailed to parents. A randomized experimental design was used to assign 465 Grade 8 students to the above programs.

Measures: The Youth Alcohol and Health Survey was used to assess participants pre-intervention and three months after the intervention. The survey measures alcohol and drug use, risk and protective factors associated with alcohol use, and exercise habits.

Outcomes: All three of the above programs resulted in positive effects on participants three months after the intervention: a decrease in alcohol consumption and problems, and an increase in exercise and improved self-control. It was found that the health and fitness screen paired with the brief consultation led to reduction in the perception of the prevalence of peer alcohol use and improvement in social norms, and was most useful for those who were using alcohol before they participated in the program. Linking images of healthy, active youth with avoidance of alcohol can lead to a decrease in peer pressure. The parental materials were useful in increasing parent–teen communication. These findings were used to develop Project SPORT.

Werch, Moore, DiClemente, Bledsoe, and Jobli (2005)

Study design: This randomized trial included 604 participants from a suburban area in grades nine and eleven. Participants were given either Project SPORT or a control program that consisted of pre-packaged generic health materials.

Measures: Participants were assessed before they participated in the program, three months after the program and twelve months after the program using the Youth Alcohol and Health Survey.

Outcomes: At the three-month assessment, the investigators found a positive program effect on participant alcohol consumption and initiation. They found a decrease in past-30-day use and decrease in those trying alcohol, an increase in protective factors (such as increased perception of parental monitoring) and an increase in exercise habits. At the twelve-month assessment, those in the program used alcohol for a briefer period of time than those in the control group; there was an increase in parent–child communication and decrease in intentions to drink in the next six months.

Moore and Werch (2009)

Study design: Moore and Werch administered a re-intervention after 18 months to participants in the above study (Werch et al., 2005).

Measures: Same as used by Werch et al. (2005).

Outcomes: This re-intervention was not beneficial to the group at large, but those participants who were using drugs were impacted positively. Those who used drugs had lower scores on alcohol use frequency and quantity and marijuana use frequency, and better risk factor scores on self-control and parent–child communication.

Lessons Learned

Overall, it is apparent that brief screening and tailored interventions for athletes can reduce alcohol use and increase exercise. This brief 12-minute program might be a realistic option to reduce substance use in schools, but could require a booster intervention over time for more at-risk participants, as the immediate program effects might prove unsustainable.

Athletic Department of Vanderbilt University Substance Abuse Program

Objectives

This program aims to educate young athletes on the negative effects of substance use, such as physical, psychological and social harms. It also identifies through drug testing athletes who might be using substances and provides an opportunity for access to appropriate counselling and rehabilitation to address these issues.

Program Description

University student athletes learn about the testing program within two weeks of beginning classes. They are provided information about how testing works, the consequences of positive tests, and state and local drug laws. Downstream, athletes are further educated on drug use (e.g., why people do drugs). Coaches and trainers also get annual education about drug use, which can help them identify any issues among the young athletes. Athletes are subject to random drug testing or “with cause” testing for drugs banned by the National Collegiate Athletics Association (e.g., steroids). If athletes test positive, they face consequences such as parental notification by the coach, notification to the Dean, continued testing and counselling, and possible suspension from the team. Any athlete

using approved supplements must have them approved also by the Vanderbilt Sport Medicine Staff and take an educational seminar (Vanderbilt University, 2005).

There was no evaluation available for this program.

Washington State University Substance Abuse Prevention Program

Objectives

The objectives of this program are to promote physical and mental well-being for athletes through education on the effects and consequences of substance use, such as the impact on academic performance, athletic abilities and one's team. The program also aims to identify substance use issues, provide treatment services and ensure athletes are medically competent to compete.

Program Description

The program begins during orientation to the university. Athletes must abide by the university's policies of being of age to drink and refrain from any consumption of substances in connection with official intercollegiate functions. If athletes violate these policies, it can result in sanctions, such as suspension from practice or expulsion. If athletes show signs of inappropriate substance use, they can be drug tested and will be held to the consequences of a positive test, such as referral to assessment or suspension from the team (Washington State University, n.d.).

There was no evaluation available for this program.

Summary

Based on the above evaluations of the programs based on screening and consultation, it is apparent that prevention efforts that educate, and incorporate personalized feedback and a tailored approach to reducing or ceasing drug use are effective in changing behaviour and altering attitudes and beliefs about substances. Personalized feedback and the use of prominent athletes who may use similar substances to the athletes give participants a tangible and relatable experience thereby affecting their attitudes more deeply. These programs should be targeted at youth who do not have the skills or attitude to quit, who are highly addicted or who have not begun use.

The authors of studies of these programs noted some considerations for program content and components:

- Programs should be accompanied with well-rounded education to ensure smokeless tobacco is not replaced with another unhealthy substance (e.g., cigarettes) (Walsh et al., 1999);
- Interventions, including administrative sanctions, substance use education, oral screening and consequences to risky behaviour, will lead to positive behaviour change (Darmody and Erich, 1994); and
- Include coaches in education delivery, as they play an influential role in terms of athlete drug use (Gansky et al., 2005).

Providing Access to Sport

Some programs did not necessarily contain a specific substance use education component or focus, but instead aimed to engage youth in physical activity to divert them from high-risk behaviours such as substance use. Providing access to sport ranged from designated space in a gymnasium for

participants to play sports with adult supervision to more intense physical strength training or sport team involvement. This program type lacks evaluation.

The following programs are primary prevention programs that aim to provide alternatives to risky behaviours, such as substance use, but are not necessarily substance use specific.

First Choice Physical Fitness Program

Theory and Program Components

- Education
- Parental involvement
- Tailored to at-risk youth

Objectives

The objectives of this program are to use structured physical training to teach youth self-esteem, self-discipline and self-responsibility, as well as life skills, in turn providing an alternative lifestyle that does not include substance use.

Program Description

The First Choice Physical Fitness Program is designed to be delivered by leaders of the community and educational organizations to at-risk youth in services such as treatment or juvenile corrections. The program has three main components. First, youth spend three days a week over a duration of nine to twelve weeks learning fitness skills and participating in exercise training. This component teaches youth important life skills, such as setting goals and self-rewards. Next, parents participate in a training module that teaches parenting skills, such as behaviour contracting with the youth and family fitness activities, and acting as a role model for youth in terms of their own health behaviours. Last, there is a peer-training component where those who have successfully completed the program can train to become fitness leaders for the other program participants.

Effectiveness

Collingwood, Sunderlin, Reynolds, and Kohl (2000)

Study: Using data collected from 329 students during program site evaluations, the study authors compared assessments of participants before and after the program to ascertain the program effect. Participants were from sites that had implemented the program, including high schools and junior high schools, and sites for the National Guard's Drug Demand Reduction program.

Measures: Before participants began the program and upon program completion they were measured and assessed on the following factors: physical fitness via field tests (e.g., number of sit ups in one minute), level of physical activity, substance use behaviours, substance use risk factors such as self-concept, general well-being and friendships, family relationships and criminal activity, and their perceptions of the program.

Outcomes: Program participants increased their levels of physical activity and fitness, as well as decreased their use of substances such as cigarettes and smokeless tobacco, alcohol and marijuana. There was also a favourable increase in the protective factors associated with substance use (e.g., increased self-concept and well-being ratings).

Lessons Learned

Although increasing the activity and fitness levels of participants led to a decrease in their risk for substance abuse as well as a decrease in their substance use, the population studied did not have a high substance use rate at the outset and this data is only representative of short-term behaviour change. Thus, it can only be assumed this program is effective in the short-term for low-risk substance users.

Aboriginal Youth Futures in Recreation and Sport Training

Urban Native Youth Association

Objectives

The Futures in Recreation and Sport Training (FIRST) program develops and delivers a diverse range of sports and recreation activities that encourage Aboriginal youth to be active, participate in skills training, make positive life choices and develop leadership skills. The program is meant to provide alternatives to anti-social activities such as substance use.

Program Description

Using established partnerships, the program facilitates the involvement of Aboriginal youth ages 11 to 24 in sports and recreational activities. The program is designed to foster resilience in youth and decrease risky behaviours, such as substance use (Urban Native Youth Association, n.d.).

There was no evaluation available for this program.

Solidarité Ahuntsic

Objectives

The objectives of this program are to prevent drug use, drug trafficking and other risky drug-related behaviours by providing alternatives to those behaviours.

Program Description

Targeted at youth ages 13 to 25 in a low-income housing area of an urban city, this program counters the absence of positive behaviour models as well as lack of positive developmental activities by providing sport activities to youth (Public Safety Canada, 2015b).

There was no evaluation available for this program.

Eastside Aboriginal Space for Youth

Objectives

The objectives of the Eastside Aboriginal Space for Youth (EASY) program are to strengthen the assets of youth based on the four elements of the medicine wheel, mental, physical, emotional and spiritual, with the goal of decreasing the likelihood of Aboriginal youth joining a gang, becoming involved in criminal activity and using substances.

Program Description

This program addresses risk factors among youth through the Development Assets Model and the Aboriginal medicine wheel. The program facilitates resiliency among participants by improving internal assets, such as interpersonal competence and positive identity and external assets, such as

conflict resolution, planning and decision-making skills. The program also benefits youth by connecting them to their culture. Youth are paired with a mentor while they participate in extracurricular activities, late-night activities and sport-related activities (e.g., basketball) (Public Safety Canada, 2015a).

There was no evaluation for this program available.

Pan Am Boxing

Objectives

Pan Am boxing encourages youth to be active in ways not related to drug and alcohol use.

Program Description

Pan Am Boxing is a free, drop-in program for youth ages 9 to 25. Younger children can participate in junior boxing classes and youth fighter training, while older youth (males only) can take residence in the facility and are provided with support. They are required to be in school or working while living in the facility and must train, participate in community service and remain abstinent from all substances (D. St. Hillaire, personal communication, July 27, 2015).

There was no evaluation available for this program.

Summary

It is unclear whether sport programs providing youth with alternatives to substance use result in decreased substance use in this age group in the long term, as most of these programs have not been evaluated. These programs are associated with an increase in physical activity and fitness that has been proven to lead to positive development.

Multilevel Programs

Multilevel programs incorporate components from more than one program type or other prevention-oriented strategies in the program. The components incorporated can be educational, peer-to-peer activities, training for parents and coaches, and changes to a sport organization's substance use policies. Evidence supports the view that programs that provide consistent messaging across several different audiences and platforms (e.g., schools, clubs and media) are effective in reducing substance use (National Institute on Drug Abuse, 2003).

The programs below use several components from the above mentioned programs, including primary and secondary prevention components, to effect behaviour changes in youth athletes.

Multilevel Community-based Intervention

Objectives

The objective of multilevel community-based interventions is to reduce alcohol consumption among amateur athletes (ages 16 to 34).

Theory and Program Components

- Education
- Policy change
- Media campaign

Program Description

One multilevel community-based intervention that has been studied contained several components aimed at influencing change through any type of sporting club:

1. 50-minute presentation for members of the club aimed at educating participants about the harms of alcohol and harm reduction strategies.
2. 40-minute PowerPoint presentation and educational handout for coaches and managers at the sports club teaching them strategies for identifying and managing alcohol-related problems within the team and the club.
3. 80-minute alcohol policy workshop for staff that can inform the development of effective club alcohol policy to be adopted within the sports club (e.g., stop serving alcohol near the end of a sporting event).
4. Local media alcohol awareness campaign including advertisements and posters.

Effectiveness

Darker et al. (2013)

Study design: Focus groups were conducted with players and coaches to understand and identify any change in club member's views on alcohol since the intervention. Six focus groups were conducted, five with players (30 participants in total) and one with coaches (six participants total).

Measures: No pre-assessment; all post-assessment was conducted through the focus groups.

Outcomes: Researchers found a culture of drinking patterns that existed within the environment before the intervention (e.g., binge drinking, abstaining from alcohol prior to a game). Participants reported an increase in their understanding of the impact of alcohol on their athletic performance and became aware of other healthy behaviours, such as hydrating before a game, but this knowledge did not alter their drinking behaviour. They also reported that the low-risk drinking guidelines mentioned in the intervention (no more than three pints of beer on any given occasion) was not a realistic option for the group, as it was too low of a threshold in this environment. The change in policy was not received well and might have been more effective coming from the players or coaches as "guidelines" instead of from the club. It was also noted that amateur clubs such as those participating in the study did not have the authority to impose rules on members.

Lessons Learned

The intervention led to an increase in knowledge, but not a behaviour change. This failure to change behaviour might be because amateur clubs are not the ideal settings for changing policy, as they are a casual social setting with adults who are within the legal drinking age. Instead, policies might be more effective in stricter team environments, such as competitive or professional teams. Similarly, proposed harm reduction strategies were not attainable by the audience and were thus not instilled. If harm reduction strategies are used to effect behaviour change, they need to be realistic for the target audience. The study did find that the coach was valued as an instigator of change and someone who could champion alcohol reduction as beneficial to physical performance.

Athletic Prevention, Programming and Leadership Education Model

Objectives

The objective of the Athletic Prevention, Programming and Leadership Education (APPLE) model is to provide colleges and universities with an environmental approach to substance abuse education and prevention tailored to an athletic department.

Theory and Program Components

- Education
- Drug testing
- Policy change

Program Description

The APPLE model is comprehensive in its implementation and program components, spanning several areas of a campus to effect change. The following seven areas are those in which the program operates:

1. The athletic department reviews all recruitment materials to ensure there is no promotion of substance use to new athletic recruits.
2. The athletic department is responsible for defining the athlete's role in the campus community and ensuring they prioritize their studies. The department is also required to lead by example in that all members of the department abstain from substance use.
3. Athletes must participate in a mandatory substance use education program, which covers federal, state and local drug laws, and clarifies any substance use misperceptions. The department must provide the athlete with informative materials as well.
4. The athletic department must incorporate school and federal drug policies and ensure there is uniform enforcement of these policies, as well as clear and uncompromising enforcement of laws.
5. The athletic department must adopt a drug testing program and provide the testing standards to parents and athletes. The program must abide by the National Collegiate Athletics Association guidelines and adhere to privacy, confidentiality and chain of custody requirements.
6. The consequences for substance use infractions must be clearly identified and disseminated uniformly regardless of the sport or athlete; the consequences must also be appropriate and fair.
7. The department should provide access to appropriate substance use education, counselling and treatment for athletes and staff (Grossman, Gieck, Freedman, & Fang, 1993).

Effectiveness

Grossman and Smiley (1999)

Study: The authors provide an overview of the success and challenges of the implementation of the APPLE program to date. Data was collected using qualitative feedback mechanisms such as survey and phone interviews.

Measures: Not applicable.

Outcomes: The highest rate of progress for program implementation was in policy development, education and programming, and attitudes and expectations. The ease of implementation depended on what stage a department was at in its recruitment processes and policies. Departments that had stronger substance use policies in place at the outset were able to more quickly implement the educational components than departments that did not. Schools that leveraged peer programs that were already in place to help implement the APPLE program saw greater progress in peer mentoring and education, which in turn resulted in greater success influencing the athletes. The biggest implementation challenges were related to time constraints, resources and attitudes of the administration staff.

Lessons Learned

The success of a program can depend on the structure of a campus's athletic department, as well as the attitudes of the staff and students who take part in the implementation. A program that is multi-pronged in nature such as the APPLE program is more readily applicable to a wide range of campuses due to the different pieces a campus can choose to adopt or incorporate.

Winning Choices

National Collegiate Athletic Association and Western Connecticut State University

Objectives

Using a multi-pronged approach based on peer-to-peer program delivery, Winning Choices aims to teach student athletes about the dangers of substance abuse through a social norms campaign and alcohol-free social events.

Program Description

When creating the Winning Choices program, developers held forums and focus groups with students, including marketing students, to inform campaign development. The onus was on athletes to run the program and they were encouraged to focus their influence on new students. Initiatives were run in residences, in classes and during athletic events, and were run early in the year, such as during summer orientation, to target new students. Because the program is administered by peers, it relies on an "environment management strategy" where athletes can dispel inaccurate social norms by correcting misconceptions held by the student population about substance use. This education occurs in the day-to-day lives of the student athletes, making teachable moments more meaningful for participants. Alternatives to substance use, such as recreation, are provided to students as well (Western Connecticut State University, n.d.).

There was no evaluation available for this program.

Summary

Multi-faceted programs that use several substance use prevention strategies could provide greater adaptability because colleges and universities can pick and choose the program components that are more applicable and build toward adopting all components over time. All schools will use these program types differently as they might be in various stages of policy and peer mentoring development.

Lessons Learned

Substance use prevention programs that rely on evidence-based practices have been shown to be effective in reducing the use of a number of substances, including alcohol and tobacco (Griffin & Botvin, 2010; Botvin, 2000). This environmental scan of youth sport and substance use prevention programs leads to the same conclusion for those programs found to be effective. Based on the scan of peer-reviewed results and the substance use prevention literature, the following considerations are key to developing an effective substance use prevention program grounded in sport:

- Substance use prevention should start at the community level to ensure activities will contribute to a flourishing community and an environment where youth are engaged and can thrive (CCSA, 2015).
- Most effective substance use prevention programs are holistic in nature, incorporating several key components, and are empathetic, flexible and informed by evidence (CCSA, 2015).
- Comprehensive substance use prevention initiatives will take a multilayered approach, where the individual, the family, school, community and public policy are all involved (CCSA, 2010).
- Programs are strategically delivered prior to and at key developmental points; that is, when substance use challenges are most likely to be encountered (CCSA, 2015).
- All youth come into a substance use prevention program with different backgrounds, demographics and characteristics. The differences might affect the level at which a program can influence a youth and could potentially result in an increase of the detrimental behaviour. Because of this potential, programs should be targeted on the subgroup participating (Fritz et al., 2005).
- Most importantly, programs should be designed to empower and engage youth through provoking and age-appropriate activities. Youth should have input in program development and be trained so that they can act as peer leaders and program facilitators in the community (CCSA, 2015).

Although evidence-based practices were incorporated into many of the programs reviewed in this scan, research showing the effectiveness of these programs specifically in a sport environment is still relatively limited. Many of the follow-up periods in the evaluations were two years or less, making it difficult to ascertain if program effects lasted in the long term. The lessons learned from these program reviews should be considered preliminary when applied to developing future sport-based substance use prevention programs. The following points summarize key considerations for youth sport substance use prevention programs based on the lessons learned from evaluations in this scan:

1. **Peer-to-peer** program administration was shown to be a valuable model for prevention efforts. The **team sports environment** provides an opportunity to influence athletes that is generally not available in any other environment (e.g., workplace) without a conscious effort to produce team cohesion. Research supports the usefulness of the sports team where students of different ages interact in a non-stigmatizing and gender-specific environment (Klepp, Halper, & Perry, 1986). The team fosters motivation through commitment to other members, collective judgments and mutual accountability (Tuckman, 1965). This effect can extend beyond the gymnasium and into the classroom as athletes interact together throughout their school experience, solidifying the positive motivation from team achievements felt by participants (Klepp et al., 1986; Tuckman & Jensen, 1977). It might be beneficial to leverage this already cohesive group as a vehicle to educate youth about the harms of substances and, ideally, instigate behaviour change.

2. Similarly, as team mates are influential to youth, so are **coaches**. As illustrated by Gansky et al. in their evaluation of a smokeless tobacco cessation program (2005), and by Darker et al. in their evaluation of a multilevel community-based program (2013), coaches are regarded as valuable sources of information, and can also influence behaviour change within a group of athletes. A key component of prevention programs is having a program administrator who is valued and respected by those receiving the intervention. A coach fits this role as he or she possesses respected and sought after skills and abilities (Crabbe, 2000), which can enhance a coach's influence and credibility. Research has also illustrated that youth who participate in sport with a coach involved showed a decrease in drug use when compared with youth who participate in a sport without a coach (e.g., Moore & Werch, 2009). Consider involving a coach when designing sport-based programs for youth that aim to decrease substance use.
3. Including **a parent-based component** (as in the ATLAS program), where parents are involved in the intervention, such as through their own training or their review of educational materials, might ensure greater impact on youth participants (CCSA, 2011). Elliot and Goldberg (1996) found that the component of their substance use prevention program that emphasized parental disapproval of drug use was effective in instigating behaviour change by dispelling norms. Youth might have incorrectly assumed parents were not opposed to drug use, but became aware of their parents' views once they were involved in the program. Werch et al. (2003) also found that involving parents in an intervention caused increased communication about substance use between parents and youth, similarly resulting in attitudinal and behavioural changes in participants. Involving parents in sport-based substance use prevention programs could increase the effect the program will have on participants.
4. Programs should include components that are **applicable** and **relatable** to participants. For instance, the programs that involved personalized health screening (e.g., oral screening) and corresponding feedback, and offered tailored interventions were effective in instigating youth behaviour change. Programs that used famous athletes that had experienced negative health harms when using the substance in question, including images of the drug effects on their body, also made a mark on participants. Similarly, programs that taught youth about the reality of substance use on their campus led to a change in attitudes and beliefs about norms. This change is unsurprising as a large body of research indicates these tactics are effective in prevention programming for this age group (Carey, Scott-Sheldon, Carey, & DeMartini, 2007; Larimer & Cronce, 2002; Larimer & Cronce, 2007). Of note, youth did not respond well to random drug testing programs.
5. Another consideration in terms of ensuring a program is relatable to youth is delivering the program through **platforms with which youth are familiar**. For example, an online survey instead of an in-person survey or feedback via email instead of a letter in the mail might be considered more relevant to youth. Use of computer-based feedback has proven to be effective with this age group (Kypri, Saunders, & Gallagher, 2003; Saunders, Kypri, Walters, Laforge, & Larimer, 2004). Also, with respect to social norming campaigns, posters and advertisements should be designed with youth in mind.
6. Several of the programs in this scan provided youth with an **alternative behaviour** to substance use. Providing an alternative was shown to result in behaviour change, while education focused solely on the negative effects of substance use was not enough to instigate change. For instance, ATHENA and ATLAS each gave youth alternatives to unhealthy behaviour, such as proper nutritional information and fitness regimes. Having these skills at the ready, youth found it more realistic to use the alternatives in place of drugs. If alternatives are not provided, youth might not see an easy avenue to refraining from or ceasing drug use. As is supported by

Cognitive Social Learning Theory, behaviour change must appear attainable to program participants or they are unlikely to alter their habits. Giving youth suggestions for healthy behaviours results in increased youth health and diverts them from risky substance use.

7. Ensure program goals are **attainable** for the target audience. As was seen from the feedback collected by Darker et al. (2013) from participants in a sport club that underwent significant policy change, certain harm reduction practices might not be applicable to the audience in question. The level of competition in the club can also influence how players receive rules about substance use. For example, setting low-risk substance use guidelines might not be reasonable in a sport environment in which participants are there to socialize and of the legal drinking age. Similarly, changes to program implementation need to be based on the level of authority held by program administrators over program participants. In general, drug testing and limiting drug use are not well received in the casual sport environments, but are accepted in competitive or highly regulated sports. To ensure a program will be effective, it is important to understand the authority mechanisms in place for the program and the receptivity of athletes to controls on their behaviour.

8. Although they were not discussed in much detail in most of the resources collected for this scan, some articles brought up relevant program **implementation considerations** that should be included in program development. These considerations are summarized briefly below.

    - Programs that contain several different components are going to be adaptable to a higher number of contexts than programs that contain only one or two components. With several layers to adopt, campuses and other organizations can choose which components to incorporate based on their current structure (e.g., already existing policies, pre-established peer-to-peer groups). This flexibility allows an organization to adopt a program at its own pace and in a manner that is compatible to it (Grossman & Smiley, 1999; Kingsland et al., 2015).
    - When developing new programs, training staff in program implementation is important. It is best for staff to be trained by someone experienced in delivering the program, with follow-up training and open communication maintained. Staff turnover and staff who are unsupportive of program goals can be an issue that leads to reduced leadership for program delivery and it can affect the fidelity of a program (Collingwood, Sunderlin, & Kohl, 1994). When designating program staff, consider personnel committed to the cause who are likely to remain in their position for some time or are willing to train new program administrators. Use methods for training staff that do not drain already limited resources, such as online modules that can completed over time (Kingsland et al., 2015).
    - When developing program materials ensure they are relevant and age appropriate to the target population. For example, level of reading skills vary by age and student; it would be detrimental to the program if the materials are at too high a reading level, and not understood by or useful to all participants (Kingsland et al., 2015).
    - Have a realistic outlook on the amount of funding, staff and time that are needed in both implementing and sustaining a program. Developing and launching a program that is based on resources that are only available for a limited time might not prove fruitful in the long term. Be mindful of these limitations during development to ensure the program will not place undue stress on a department or organization.

Conclusion

The objectives of the environmental scan were:

- To review and summarize North American youth sport programs that contain substance use education;
- To examine whether these sport programs effectively reduce substance use among youth (ages 10 to 24); and
- To summarize lessons learned in this area based on peer-reviewed evaluations in order to facilitate the exchange of knowledge within the field and help program developers shape their own community programs.

This scan reviewed evaluations for several youth sport programs that contain substance use education, as well as other programs that have not yet been evaluated. Based on the conclusions from these evaluations, as well as findings established from the substance use prevention literature, this scan is able to provide some preliminary lessons learned for future consideration in the development of evidence-informed substance use prevention programs.

The results from this environmental scan illustrated that the most common program types to use the sport environment to influence youth are peer-to-peer programs and programs that incorporate screening, consultation and counselling. The next most common program type to use sport was social norming campaigns. These programs were most commonly based on the Theory of Planned Behaviour and, to less extent, Social Learning Theory, both of which state that youth make decisions based on their knowledge and attitudes, which are influenced by those around them. Most of the programs reviewed targeted the primary prevention level, which is the community (e.g., sport teams), with the screening, consultation and counselling programs targeting the secondary level. Many of the programs targeted youth who were in school (a “captive” audience), and began as early as grade school. This targeting has been shown to be beneficial, as it is easier to influence youth during key developmental timeframes. Programs ensured they were providing effective substance use education and alternatives at a time when young people are beginning to formulate their attitudes and beliefs (and eventually behaviours) about alcohol and drugs (Griffin & Botvin, 2010).

Some limitations associated with this scan have implications for the interpretation of results. It should be noted that the lessons learned, although promising, were based on a small number of evaluations. To develop more concrete best practices for sport programs it is necessary to continue to evaluate new or available programs. Many of the evaluations included in this scan had follow-up periods that ranged from four weeks to two years after the intervention, so behaviour change due to program participation can only be considered as short term. Until there is longitudinal data, we cannot be certain these programs result in permanent substance use cessation or prevention.

These evaluations were conducted in specific environments, with certain populations and varying contexts (e.g., sport type, local laws, implementation factors, etc.), which means findings might not be generalizable across all jurisdictions and programs. It cannot be guaranteed that all relevant programs were picked up during the environmental scan. Some program information might not be evaluated or available online. Also, it cannot be verified that all relevant programs were submitted by recipients of the request for information. Finally, some of the programs included in this scan are no longer active and the reasons they have lapsed were not available at the time of the scan.

Although the research results on the role sport plays in influencing substance use among youth are mixed, there is some encouraging evidence supporting the use of the sport environment as a

mechanism to deliver substance use prevention efforts, as long as they are based on evidence and tailored to the audience. As Elliot et al. concluded (2004), sport teams are found to be effective natural vehicles for gender-specific, peer-led curricula that promote healthy lifestyles and deter health harming behaviours such as substance use. The topic of drug use is arguably even more relevant for student athletes than for youth in general because of the importance of physical health in sport and competition. The values supported by sport, paired with a team environment where all athletes are accountable for their performance, make sport a promising area for substance use education, for identifying substance use issues and for changing behaviour related to the unhealthy use of substances.

Future research aimed at better understanding the relationship between sport participation and youth substance use will be beneficial in further refining how sport programs can be used to prevent unhealthy behaviours such as substance use among youth. More research and program evaluation is needed to validate the preliminary findings in the research literature. Substance use prevention specialists should collaborate with practitioners and sport professionals who deal with youth to ensure sport-based prevention programs are based on evidence and grounded in appropriate theoretical constructs. Ideally, these programs should provide appropriate non-judgmental avenues to deal with substance use issues, as well as provide supportive opportunities for youth to work on personal development in terms of education, health and other developmental areas (Crabbe, 2000). The findings from this scan can also help to ensure research efforts to develop sport programs that address substance use are not being duplicated across sectors. This scan is intended to contribute to conceptualizing sustainable sport programs that are based on evidence and grounded in sound evaluation, and that leverage the sport environment to encourage youth to develop healthy lifestyles free from the use of substances.

References

Advocates for Youth. (n.d.). *Peer programs: looking at the evidence of effectiveness, a literature review*. Washington, D.C.: Author. Retrieved from www.advocatesforyouth.org/publications/publications-a-z/1856-peer-programs-looking-at-the-evidence-of-effectiveness-a-literature-review.

Ajzen, I. (2012). The theory of planned behavior. In P. Van Lange, A. Kruglanski, A., & E. Higgins (Eds.), *Handbook of theories of social psychology: volume one* (pp.438–454). London, England: Sage.

American College Health Association. (2013). *National college health assessment II: Canadian reference group data report*. Hanover, MD: Author.

American College of Sports Medicine. (1987). *Position stand on the use of anabolic-androgenic steroids in sports.* Indianapolis, IN: Author. Retrieved from journals.lww.com/acsm-msse/Citation/1987/10000/Position_Stand_on_The_Use_of_Anabolic_Androgenic.23.aspx.

Ary, D.V., Tildesley, E., Hops, H., & Andrews, J. (1993). The influence of parent, siblings, and peer modeling and attitudes on adolescent use of alcohol. *International Journal of Addiction, 28*, 853–880.

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Berkowitz, A.D. (1997). From reactive to proactive prevention: promoting an ecology of health on campus. In P.C. Rivers & E.R. Shore (Eds.), *Substance abuse on campus: a handbook for college and university personnel* (pp. 119–139). Westport, Connecticut: Greenwood Press.

Bloch, S.A., & Ungerleider, S. (1988). Targeting high-risk groups on campus for drug and alcohol prevention: an examination and assessment. *International Journal of Addictions, 23*, 299–319.

Botvin, G.J. (2000). Preventing drug abuse in schools: social and competence enhancement approaches targeting individual-level etiological factors. *Addictive Behaviors, 25,* 887–897.

Burns, W.D. (1989). Alcohol and community: rethinking privilege. *Educational Record, 70*, 54–58.

Canadian Centre for Ethics in Sport. (2013). *Succeed clean year 1 (2012–2013): program report.* Ottawa, Ont.: Author. Retrieved from cces.ca/sites/default/files/content/docs/pdf/cces-succeedcleanprogram-overview.pdf.

Canadian Centre on Substance Abuse. (2010). *Stronger together: Canadian standards for community-based youth substance abuse prevention*. Ottawa, Ont.: Author. Retrieved from www.ccsa.ca/Resource%20Library/2010_CCSA_Community-based_Standards_en.pdf.

Canadian Centre on Substance Abuse. (2011). *Strengthening our skills: Canadian guidelines for youth substance abuse prevention family skills program*. Ottawa, Ont.: Author. Retrieved from www.ccsa.ca/Resource%20Library/2010_CCSA_Family_skill-based_Guidelines_en.pdf.

Canadian Centre on Substance Abuse. (2015). *Competencies for the youth substance use prevention workforce: prevention workforce competencies report.* Ottawa, Ont.: Author. Retrieved from www.ccsa.ca/Resource%20Library/CCSA-Prevention-Workforce-Competencies-Report-2015-en.pdf.

Canadian Lacrosse Association. (2016). *CLA's online anti-doping education program*. Ottawa, Ont.: Author. Retrieved from www.lacrosse.ca/view/cla/canadian-anti-doping-program-4/clas-education-program.

Carey, K.B., Scott-Sheldon, L.A.J., Carey, M.P., & DeMartini, K.S. (2007). Individual-level interventions to reduce college student drinking: a meta-analytic review. *Addictive Behaviors, 32*, 2469–2494.

Collingwood, T.R., Sunderlin, J., & Kohl, H.W.,3rd. (1994). The use of a staff training model for implementing fitness programming to prevent substance abuse with at-risk youth. *American Journal of Health Promotion, 9*(1), 20–3, 33.

Collingwood, T.R., Sunderlin, J., Reynolds, R., & Kohl, H.W.,3rd. (2000). Physical training as a substance abuse prevention intervention for youth. *Journal of Drug Education, 30*(4), 435–451.

Corrigan, J.T. (2011, April 25). RISAS leads statewide training for varsity athletes against substance abuse. *North Kingstown Patch*. Retrieved from patch.com/rhode-island/northkingstown/an--risas-leads-statewide-training-for-varsity-athlet23cc5fd5bf.

Crabbe, T. (2000). A sporting chance?: using sport to tackle drug use and crime. *Drugs: Education, Prevention and Policy, 7*(4), 381–391.

Cuijpers, P. (2003). Three decades of drug prevention research. *Drugs: Education, Prevention and Policy, 10*(1), 7–20.

Darker, C.D., Ivers, J., O'Farrell, A., Dolan, R., Eldin, N., & Allwright, S. (2013). A qualitative study of the perceived impact of a community mobilisation intervention to reduce alcohol consumption among amateur sportsmen. *Irish Journal of Psychological Medicine, 30*(1), 57–66.

Darmody, D.L., & Ehrich, B. (1994). Snuffing it out: a smokeless tobacco intervention with athletes at a small private college. *Journal of American College Health, 43*(1), 27–30.

Doumas, D.M., Haustveit, T., & Coll, K.M. (2010). Reducing heavy drinking among first year intercollegiate athletes: a randomized controlled trial of web-based normative feedback. *Journal of Applied Sport Psychology, 22*(3), 247–261.

Elliot, D., & Goldberg, L. (1996). Intervention and prevention of steroid use in adolescents. *American Journal of Sports Medicine, 24*(6 Suppl), S46–S47.

Elliot, D., Goldberg, L., Moe, E., DeFrancesco, C. Durham, M., & Hix-Small, H. (2004). Preventing substance use and disordered eating: initial outcomes of the ATHENA (Athletes Targeting Healthy Exercise and Nutrition Alternatives) program. *Archives of Pediatrics and Adolescent Medicine, 158*(11), 1043–1049.

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 Behaviour, 30*(5), 1001–1005.

Gansky, S.A., Ellison, J.A., Rudy, D., Bergert, N. Letendre, M.A., Nelson, L., ... Walsh, M. (2005). Cluster-randomized controlled trial of an athletic trainer-directed spit (smokeless) tobacco intervention for collegiate baseball athletes: results after 1 year. *Journal of Athletic Training, 40*(2), 76–87.

Goldberg, L., Bents, R., Bosworth, E., Trevisan, L., & Elliot, D. (1991). Anabolic steroid education and adolescents: do scare tactics work? *Pediatrics, 87*(3), 283–286.

Goldberg, L., Bosworth, E., Bents, R., & Trevisan, L. (1990). Effect of an anabolic steroid education program on knowledge and attitudes of high school football players. *Journal of Adolescent Health Care, 11*(3), 210–214.

Goldberg, L., Elliot, D., Clarke, G., MacKinnon, D., Moe, E., Zoref, L., … Lapin, A. (1996a). 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., Clarke, G., MacKinnon, D., Zoref, L., Moe, E., …Wolf, S. (1996b). The Adolescents Training and Learning to Avoid Steroids (ATLAS) prevention program. *Archives of Pediatrics & Adolescent Medicine, 150*(7), 713–721.

Goldberg, L., Elliot, D. MacKinnon, D., Moe, E., Kuehl, K.S., Nohre, L., & 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. *Journal of Adolescent Health, 32*(1), 16–25.

Goldberg, L., Elliot, D., MacKinnon, D., Moe, E., Kuehl, K.S., Yoon, M., … Williams, J. (2007). Outcomes of a prospective trial of student-athlete drug testing: the Student Athlete Testing Using Random Notification (SATURN) study. *Journal of Adolescent Health, 41*(5), 421–429.

Griffin, K.W., & Botvin, G.J. (2010). Evidence-based interventions for preventing substance use disorders in adolescents. *Child & Adolescent Psychiatric Clinics of North America, 19*(3), 505–526.

Grossman, S.J., Gieck, J., Freedman, A., & Fang, W.L. (1993). The Athletic Prevention Programming and Leadership (APPLE) model: developing substance abuse prevention programs. *Journal of Athletic Training, 28*(2), 137–144.

Grossman, S.J., & Smiley, E.B. (1999). APPLE: Description and evaluation of a substance abuse education and prevention program for collegiate athletics. *Journal of Primary Prevention, 20*(1), 51–59.

Halldorsson, V., Thorlindsson, T., & Sigfusdottir, I.D. (2014). Adolescent sport participation and alcohol use: The importance of sport organization and wider social context. *International Review for the Sociology of Sport, 49*, 311–330.

Hanson, J.M. (2009). Equipping athletes to make informed decisions about performance-enhancing drug use: a constructivist perspective from educational psychology. *Sport in Society, 12*(3), 394–410.

Holt N.L. (Ed.). (2008). *Positive youth development through sport*. London, England: Routledge.

Janz, N.K., & Becker, M.H. (1984). The Health Belief Model: a decade later. *Health Education Quarterly, 11*(1), 1–47.

Jones, S.E., Oeltmann, J., Wilson, T.W., Brener, N.D., & Hill, C.V. (2001). Binge drinking among undergraduate college students in the United States: implications for other substance use. *Journal of American College Health*, *50*, 33–43.

Kingsland, M., Wolfenden, L., Tindall, J., Rowland, B., Sidey, M., McElduff, P., & Wiggers, J. H. (2015). Improving the implementation of responsible alcohol management practices by community sporting clubs: a randomised controlled trial. *Drug and Alcohol Review*, *34*(4), 447–457.

Klepp, K.I., Halper, A., & Perry, C.L. (1986). The efficacy of peer leaders in drug abuse prevention. *Journal of School Health, 56* (9), 407–411.

Kypri, K., Saunders, J.B., & Gallagher, S.J. (2003). Acceptability of various brief intervention approaches for hazardous drinking among university students. *Alcohol and Alcoholism, 38*, 626–628.

Larimer, M.E., & Cronce, J.M. (2002). Identification, prevention, and treatment: A review of individual-focused strategies to reduce problematic alcohol consumption by college students. *Journal of Studies on Alcohol, Supplement, 14,* 148–163.

Larimer, M.E., & Cronce, J.M. (2007). Identification, prevention, and treatment revisited: individual-focused college drinking prevention strategies 1999–2006. *Addictive Behaviors, 32,* 2439–2468.

Leyton, M., & Stewart, S. (Eds.). (2014). Substance abuse in Canada: childhood and adolescent pathways to substance use disorders. Ottawa, Ont.: Canadian Centre on Substance Abuse

Lisha, N.E., & Sussman, S. (2010). Relationship of high school and college sports participation with alcohol, tobacco, and illicit drug use: a review. *Addictive Behaviors, 35*, 399–407.

MacKinnon, D., Goldberg, L., Clarke, G., Elliot, D.L., Cheong, ...Krull, J.L. (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.

Manitoba High Schools Athletic Association. (n.d.). *Champions cross mentoring program.* Winnipeg, Man.: Author. Retrieved from www.mhsaa.ca/about/page-id-231/Champions-Cross-Mentoring-Program/.

Martin, H., & Thrasher, D. (1989). Chemical dependency and treatment of the professional athlete. In G. Lawson & A.W. Lawson (Eds.), *Alcoholism and substance abuse in special populations* (pp. 315–339).Rockville, MD: Aspen Publishers.

Massey, R.F., & Neidigh, L.W. (1990). Evaluating and improving the functioning of a peer-based alcohol abuse prevention organization. *Journal of Alcohol and Drug Education, 35*, 24–35.

Mayberry, M.L., Espelage, D.L., & Koenig, B. (2009). Multilevel modeling of direct effects and interactions of peers, parents, school, and community influences on adolescent substance use. *Journal of Youth and Adolescence, 38,* 1038–1049.

McAlaney, J., Helmer, S., Stock, C., Vriesacker, E., Van Hal, G., Dempsey, R., ... Mikolajczyk, R. (2015). Personal and perceived peer use of and attitudes toward alcohol among university and college students in seven EU Countries: Project SNIPE. *Journal of Studies on Alcohol and Drugs, 76*(3), 430–438.

Miller, T., & Hendrie, D. (2008). *Substance abuse prevention dollars and cents: a cost-benefit analysis* (Pub. No. SMA 07-4298). Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration. Retrieved from www.samhsa.gov/sites/default/files/cost-benefits-prevention.pdf.

Moore, M.J., & Werch, C.E. (2005). Sport and physical activity participation and substance use among adolescents. *Journal of Adolescent Health, 36*(6), 486–493.

Moore, M.L., & Werch, C.E. (2009). Efficacy of a brief alcohol consumption reintervention for adolescents. *Substance Use and Misuse, 44*(7), 1009–1020.

National Institute on Drug Abuse. (2003). *Preventing drug use among children and adolescents: a research-based guide for parents, educators, and community leaders*. Bethesda, MD: Author. Retrieved from www.drugabuse.gov/sites/default/files/preventingdruguse_2.pdf.

National Institute on Drug Abuse. (2008). Can physical activity and exercise prevent drug use: *promoting a full range of science to inform prevention*. Bethesda, MD: Author. Retrieved from archives.drugabuse.gov/meetings/exercise/.

Perkins, H.W., & Craig, D.W. (2006). A successful social norms campaign to reduce alcohol misuse among college student-athletes. *Journal of Studies on Alcohol, 67*(6), 880–889.

Public Safety Canada. (2015a). Brief Summaries — Substance Abuse Prevention Projects — British Columbia. Retrieved from www.publicsafety.gc.ca/cnt/rsrcs/pblctns/sbstnc-bs-prvntn-bc/index-en.aspx.

Public Safety Canada. (2015b). Brief Summaries — Substance Abuse Prevention Projects — Quebec. Retrieved from www.publicsafety.gc.ca/cnt/rsrcs/pblctns/sbstnc-bs-prvntn-qbc/index-en.aspx.

Ranby, K.W., Aiken, L.S., MacKinnon, D., Elliot, D., Moe, E.L., McGinnis, W., & Goldberg, L. (2009). A mediation analysis of the ATHENA intervention for female athletes: prevention of athletic-enhancing substance use and unhealthy weight loss behaviors. *Journal of Pediatric Psychology, 34*(10), 1069–1083.

Rogers, E.M. (1983). *Diffusion of innovations*. New York, NY: Free Press.

San Diego State University Research Foundation. (2009). *Alcohol eCHECKUP TO GO for universities & colleges.* San Diego, CA: Author. Retrieved from www.echeckuptogo.com/can/programmes/coll_alcohol.php.

Saunders, J.B., Kypri, K., Walters, S.T., Laforge, R.G., & Larimer, M.E. (2004). Approaches to brief intervention for hazardous drinking in young people. *Alcoholism: Clinical and Experimental Research, 28*, 322–329.

Sehwan, K., Coletti, S.D., Crutchfield, C.C., Williams, C. & Helper, N. (1995). Benefit-cost analysis of drug abuse prevention programs: a macroscopic approach. *Journal of Drug Education, 25*(2), 111–127.

Social Innovation Research Group. (2013). *Succeed clean student survey results 2013*. Waterloo, Ont.: Wilfred Laurier University. Retrieved from kitchener.ctvnews.ca/polopoly_fs/1.1522694!/httpFile/file.pdf.

Solutions Research Group. (2014, June 10). Massive competition in pursuit of the $5.7 billion Canadian youth sports market. Retrieved from www.srgnet.com/2014/06/10/massive-competition-in-pursuit-of-the-5-7-billion-canadian-youth-sports-market/.

Statistics Canada. (2015). *Canadian Tobacco, Alcohol and Drugs Survey: Summary of results for 2013*. Ottawa, Ont.: Author. Retrieved from healthycanadians.gc.ca/science-research-sciences-recherches/data-donnees/ctads-ectad/summary-sommaire-2013-eng.php.

Steyl, T., & Phillips, J. (2011). Actual and perceived substance use of health science students at a university in the Western Cape, South Africa. *African Health Sciences, 11*(3), 329–333.

Sztainert, T. (2015). Sports participation and substance use in Canada: Analysis of the effects of sport type, self-esteem and peer use. Unpublished study commissioned by Canadian Centre on Substance Abuse.

Terry-McElrath, Y.M., O'Malley, P.M., & Johnston, L.D. (2011). Exercise and substance use among American youth, 1991–2009. *American Journal of Prevention Medicine, 40*(5), 530–540.

Thombs, D.L., & Hamilton, M.J. (2002). Effects of a social norm feedback campaign on the drinking norms and behavior of Division I student-athletes. *Journal of Drug Education, 32*(3), 227–244.

Thombs, D.L., Wolcott, B.J., & Farkash, L.G.E. (1997). Social context, perceived norms and drinking behavior in young people, *Journal of Substance Abuse, 9,* 257–267.

Trenhaile, J., Choi, H., Proctor, T.B., & Work, P. (1998). The effect of anabolic steroid education on knowledge and attitudes of at-risk preadolescents. *Journal of Alcohol and Drug Education, 43*(2), 20–35.

Tuckman, B.W. (1965). Developmental sequence in small groups. *Psychological Bulletin, 63*(6), 384–389.

Tuckman, B.W., & Jensen, M.A.C. (1977). Stages of small group development revisited. *Group & Organization Management, 2*, 419–427.

Tye, J., Warner, K., & Glantz, S. (1987). Tobacco advertising and consumption: evidence of a causal relationship. *Journal of Public Health Policy, 8*, 492–507.

Urban Native Youth Association. (n.d.). *Sports & recreation*. Vancouver, BC: Author. Retrieved from www.unya.bc.ca/programs/sports-rec-program.

Vanderbilt University. (2005). Substance abuse program. Nashville, TN: Author. Retrieved from www.vanderbilt.edu/champs/substanceabuse.pdf.

Villani, S. (2001). Impact of media on children and adolescents: a 10-year review of the research. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 392–401.

Walsh, M., Hilton, J.F., Ellison, J.A., Gee, L., Chesney, M., Tomar, S., & Ernster, V. (2003). Spit (smokeless) tobacco intervention for high school athletes: results after 1 year. *Addictive Behaviors, 28*(6), 1095–1113.

Walsh, M., Hilton, J.F., Masouredis, C.M., Gee, L., Chesney, M., & Ernster, V. (1999). Smokeless tobacco cessation intervention for college athletes: results after 1 year. *American Journal of Public Health, 89*(2), 228–234.

Washington State University. (n.d.). *Substance abuse prevention program*. Seattle, WA: Author. Retrieved from www.athletics.wsu.edu/ARC/Handbook/07_08/SEC3/Abuse.pdf.

Werch, C. (2007). The Behavior-Image Model: a paradigm for integrating prevention and health promotion in brief interventions. *Health Education Research, 22*(5), 677–690.

Werch, C., Moore, M., DiClemente, C.C., Bledsoe, R., & Jobli, E. (2005). A multihealth behavior intervention integrating physical activity and substance use prevention for adolescents. *Prevention Science, 6*(3), 213–226.

Werch, C., Moore, M., DiClemente, C.C., Owen, D.M., Jobli, E., & Bledsoe, R. (2003). A sport-based intervention for preventing alcohol use and promoting physical activity among adolescents. *Journal of School Health, 73*(10), 380–388.

Western Connecticut State University. (n.d.). *NCAA — supporter of winning choices*. Danbury, CT: Author. Retrieved from www.wcsu.edu/CHOICES/pages/winningncaa.htm.

Wundersitz, L.N., Hutchinson, T.P., & Woolley, J.E. (2010). *Best practice in road safety mass media campaigns: a literature review*. Adelaide, Australia: Centre for Automotive Safety Research. Retrieved from casr.adelaide.edu.au/publications/list/?id=1165.

Appendix A

Information Request

June 2015

Dear Colleagues,

One of the main research objectives for CCSA's Youth Sport and Substance Abuse priority is to conduct an environmental scan of youth sport programs that address the prevention of substance use or abuse. We need **your help to identify** programs that aim to decrease substance use or have a drug education component targeted at youth aged 10 to 24 through the use of sport. The program can be located anywhere in the world but information needs to be available in French or English. Preference will be given to programs generalizable to the Canadian setting. In an effort to build on existing work and refrain from duplicating research, please **also identify** any existing scans or summaries of this nature. All suggestions are greatly appreciated.

The environmental scan will be circulated widely, once complete.

Please send your information via email to Anna McKiernan at amckiernan@ccsa.ca and join the Canadian Sport and Youth Substance Abuse Prevention (CSYSAP) Network on LinkedIn to see what others are sharing.

New to the CSYSAP Network? Email youth-jeunes@ccsa.ca to be added to the distribution list.

Many thanks for your suggestions and we look forward to hearing from you,

Rhonda Boudreau
CSYSAP Network Coordinator
Knowledge Broker, Canadian Centre on Substance Abuse

Juin 2015

Madame, Monsieur,

L'un des principaux objectifs de recherche visés par la priorité Sport et abus de substances chez les jeunes du CCLT est la réalisation d'une analyse contextuelle des programmes sportifs jeunesse qui abordent aussi la question de la consommation ou de l'abus de substances. Nous avons **besoin de votre aide** pour recenser les programmes visant à réduire la consommation des 10 à 24 ans ou à les sensibiliser à la drogue par l'entremise d'activités sportives. Les programmes peuvent être offerts partout dans le monde entier, mais l'information doit être disponible en français ou en anglais. Nous accordons aussi une préférence aux programmes applicables au contexte canadien. Ajoutons que nous aimerions tirer parti du travail déjà fait et éviter le dédoublement des efforts, alors nous vous

invitons à **nous informer** de toute analyse ou de tout résumé du genre que vous connaissez. Les suggestions sont les bienvenues.

Une fois prête, l'analyse contextuelle sera communiquée à de nombreux intervenants.

Veuillez faire parvenir l'information à Anna McKiernan à amckiernan@ccsa.ca et rejoindre le Réseau sur le sport et la prévention de la toxicomanie chez les jeunes au Canada sur LinkedIn pour voir les contributions d'autres membres.

Vous découvrez le Réseau? Veuillez écrire à youth-jeunes@ccsa.ca si vous désirez faire partie de la liste de distribution.

Un grand merci pour vos suggestions, et au plaisir d'avoir de vos nouvelles.

Rhonda Boudreau
Coordonnatrice du Réseau
Courtière du savoir, Centre canadien de lutte contre les toxicomanies

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LinkedIn Post

Sport-related youth programs that address drug use / Programmes sportifs jeunesse qui abordent la consommation de drogue

Request for your input! I am gathering information on youth sport programs that address drug use and would greatly appreciate your help. Please send along any information on sport programs for youth that:

- include information or education on alcohol, tobacco or other drugs (e.g., street drugs, the abuse of prescription drugs, or appearance and/or performance enhancing drugs)
- aim to prevent or delay drug use or reduce the harms associated with drug use
- focus on young people aged 10 to 24
- are located in Canada or elsewhere in the world.

This information will feed into a summary of sport-related youth programs that address drug use. When finished, the summary will be published and freely available.

We don't want to duplicate efforts or reinvent the wheel, so please let me know if similar summaries exist.

Thank you for your help!

Ceci est une demande d'aide! Je réunis actuellement de l'information sur les programmes sportifs jeunesse qui abordent la consommation de drogue et j'aurais besoin de votre aide. Si vous connaissez de tels programmes, je vous prierais de me faire parvenir tout renseignement pertinent sur ces points :

- Information ou éducation sur l'usage d'alcool, de tabac ou d'autres drogues (p. ex. drogues de la rue, abus de médicaments d'ordonnance, ou drogues visant à rehausser la performance ou l'apparence);
- Prévention ou retardement de la consommation de drogue ou réduction des méfaits qui y sont associés;
- Accent mis sur les jeunes âgés de 10 à 24 ans;
- Programmes situés au Canada ou à l'étranger.

Ces renseignements seront inclus dans un résumé sur les programmes sportifs jeunesse qui abordent la consommation de drogue. Quand il sera prêt, ce résumé sera rendu public et facilement accessible.

Cela dit, nous ne voulons pas travailler en double ou réinventer la roue, alors veuillez m'aviser si de tels résumés existent déjà.

Merci de votre aide!

Appendix B

Search Strategies

PubMed

((((((("Alcohol Drinking/prevention and control"[Mesh]) OR "Harm Reduction"[Mesh]) OR "Alcoholic Intoxication/prevention and control"[Mesh]) OR "Doping in Sports/prevention and control"[Mesh]) OR "Substance-Related Disorders/prevention and control"[Mesh])) AND "Sports"[Mesh]

((((alcohol[Title]) OR drug*[Title]) OR steroid*[Title])) AND sports[Title]

PsycNet

(((IndexTermsFilt:("Alcohol Abuse") OR IndexTermsFilt:("Alcohol Drinking Patterns") OR IndexTermsFilt:("Alcohol Intoxication") OR IndexTermsFilt:("Alcohol Rehabilitation") OR IndexTermsFilt:("Alcoholism") OR IndexTermsFilt:("Binge Drinking") OR IndexTermsFilt:("Driving Under the Influence") OR IndexTermsFilt:("Drug Abuse Prevention") OR IndexTermsFilt:("Drug Education") OR IndexTermsFilt:("Harm Reduction") OR IndexTermsFilt:("Performance Enhancing Drugs") OR IndexTermsFilt:("Social Drinking") OR IndexTermsFilt:("Steroids"))) AND ((IndexTermsFilt:("Athletes") OR IndexTermsFilt:("Baseball") OR IndexTermsFilt:("Basketball") OR IndexTermsFilt:("Clubs (Social Organizations)") OR IndexTermsFilt:("College Athletes") OR IndexTermsFilt:("Football") OR IndexTermsFilt:("Judo") OR IndexTermsFilt:("Martial Arts") OR IndexTermsFilt:("Physical Fitness") OR IndexTermsFilt:("Soccer") OR IndexTermsFilt:("Sports") OR IndexTermsFilt:("Swimming") OR IndexTermsFilt:("Tennis") OR IndexTermsFilt:("Weightlifting")))) OR ((Title:(sport*) OR Title:(athlete*)) AND (Title:(alcohol) OR Title:(drug*) OR Title:(steroid*))) AND Peer-Reviewed Journals Only

Grey Literature

National Registry of Evidence-based Programs and Practices

Sports, sport, performance enhancing, athlete, athletes, steroids, physical activity

Promising Practices Network (scanned section on substance abuse)

CAMH's Google Custom

Sports, athletes

Google

sports "substance abuse" program

athletes "substance abuse" program

Appendix C

Program Theories

Social Learning Theory and Cognitive Social Learning Theory

Social Learning Theory (Bandura, 1977) is based on the notion that individual behaviour is influenced by one's social environment, including siblings, family and peers (Ary, Tildesley, Hops, & Andrews, 1993). In the case of an adolescent who is in a sport environment, he or she could learn substance abuse behaviours from the other members of his or her sport team, other athletes he or she spend time with or coaches. Observations of those in close proximity allow for the individual to develop an understanding of drugs and norms about drug use. This understanding might result in the adolescent initiating substance use, depending on his or her influencers (MacKinnon et al., 2001). The Cognitive Social Learning Theory maintains that it is also important that the individual knows how to behave, believes he or she is capable of performing a particular behaviour, and that if he or she performs this behaviour the desired outcome will be achieved (Bandura, 1986).

With the support of Social Learning Theory, programs can aim to change norms about drug use and increase the awareness of disapproval by engaging coaches and implementing peer educators to influence program recipients (MacKinnon et al., 2001).

Theory of Planned Behaviour

The Theory of Planned Behaviour states that behaviours are based on the intentions of an individual or their decisions to act. These decisions are made based on his or her attitude toward the behaviour, which is built from their perception of the norms surrounding the behaviour, their estimated consequences of this behaviour, mainly from important others, and the societal control over this particular behaviour (Ajzen 2012). In other words, youth make decisions about drug use based on what they consider to be the attitudes of those around them, such as their friends, and how they might be penalized for the behaviour, both by those important to them, such as coach or parents, and societal structures, such as police.

Using this theory, a program could aim to alter an adolescent's perceived norms about substance use and estimated consequence of using substances to influence the decisions made about using substances.

Health Belief Model

This theory posits that decisions to behave in a certain manner are based on one's perceived susceptibility to and severity of the effects related to the behaviour (Janz & Becker, 1984). Under this model, adolescents would refrain from behaving in an unhealthy manner if they judged their susceptibility to a negative consequence of this behaviour as high and viewed the effects of the behaviour as negative. In terms of youth drug use, young athletes might refrain from using substances if they believe there is a high likelihood their body will be damaged from use and that the severity of this damage will alter their health considerably. Ideally, an alternative health behaviour is offered that would provide a benefit.

Any prevention programs using this theory would aim to increase the information available about the health harms of drug use to ensure young athletes truly believe they are susceptible to these harms and that these harms could alter their physical performance significantly. The program would also include a key alternate behaviour to drug use that youth could partake in to replace drug use.

Social Norms Theory

Social Norms Theory contends that behaviour is based on a person's perception of the attitudes and behaviours of peers. These perceptions are often biased and generally overestimate the proportion of peers who partake in a risky behaviour such as drug use or drinking. Because of overestimating, an individual might try to meet these misperceived peer norms by similarly partaking in such risky behaviour to fit in. This means that a teen's overestimation of the frequency in which peers drink or use drugs puts him or her at risk for substance use (Berkowitz, 1997; Thombs, Wolcott, & Farkash, 1997).

Using this theory as a base, Social Norming prevention programs aim to dispel misperceptions of peer substance use by educating youth using realistic statistics of use levels, which are often much lower than what youth would assume. These programs aim to reduce drug use by illustrating it is not as prevalent among youth as participants might think.

Diffusion of Innovations

This theory places a high importance on "opinion leaders" within a population. It argues that opinion leaders are the root of a group's norms and behaviours, and once their behaviours change this change will spread throughout the group. For example, a captain of a sports team along with his assistant captains might be regarded as opinion leaders and team mates might model their behaviours after these influential individuals.

Prevention programs, especially sport-related, could attempt to leverage these powerful positions and use leaders within a sport environment as a vehicle to model appropriate behaviours within the group. For instance, a team leader could act as the prevention program's peer leader and openly support positive health behaviours such as refraining from using substances by both abstaining from use and speaking of the health benefits related to this abstinence (Rogers, 1983).

Integrative Behaviour-Image Model

This model pairs the prevention of risky behaviours with the promotion of healthy habits. A strong importance is placed on positive personal and social influences as key motivators in health development. Werch, who developed the theory, states: "interventions limited to addressing risk behaviours like substance use may be perceived by adolescents as more negative and less interesting than those targeting health-promoting behaviours, and therefore may suffer from lack of interest and participation. Needed are models for developing brief interventions that integrate health promotion and prevention messages aimed at enhancing youth development and achieving salient goals of adolescents" (2007, p. 678). Thus, it is important to promote abstinence from a risky behaviour, but also provide a positive behaviour or perspective in tandem.

This theory is relevant to the use of sport as a means to prevent risky behaviour. Programs that promote healthy alternatives such as physical activity, healthy eating and other healthy behaviours can use sport performance as the key reason to abstain or limit substance use. For example, youth could be told that alcohol use will limit their athletic performance in a sports game and they should instead concentrate on eating nutritious meals.

Theory of Constructivism

This theory is based on the concept that knowledge is understood by the individual through personal constructions that are based on the individual's personal experience. In other words, individuals understand concepts not necessarily due to their evidence base, but instead because of one's personal experiences. Constructivism supports individuals learning concepts via engagement with relevant problems, meaning understanding grows from meaningful, but accurate, experience.

A program based on the Theory of Constructivism would engage with participants' existing conceptions, as well as provide further appropriate experience and the tools for interpreting these experiences appropriately. Using teen athletes as an example, a program could provide scenarios where athletes are offered APEDs and require participants to decide the appropriate response to the offer. Through this exercise program administrators would provide guidance and feedback on the best way to approach such situations (Hanson, 2009).