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Interim Report

Towards a vision for community-based prevention: Exploring the anti-doping education landscape and extending feasibility testing of **RE>ACT**

Prepared for the  
**World Anti-Doping Agency**

By  
**Carnegie School of Sport**

December 2019



Institute for  
Sport, Physical  
Activity & Leisure

# Research Team

The research team was comprised of members from the Carnegie School of Sport at Leeds Beckett University. Specifically, the team included:

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- Professor Susan Backhouse (Leeds Beckett University, Co-Investigator)
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The preliminary RE>ACT project was supported by an Advisory Board that included:

- Ms Becky Bell (University of Arizona, Associate Athletics Director, CATS Life Skills)
- Dr Mary Wilfert (formerly NCAA, Associate Director of the Sport Science Institute)
- Mr Matthew Perry (formerly UKAD, Next Generation Education Officer)
- Professor Philip Sullivan (Brock University, Chair of Social Psychology)

We would also like to thank Dr Helen Staff (Leeds Beckett University) for her contribution to data collection, analysis, and the production of this report.

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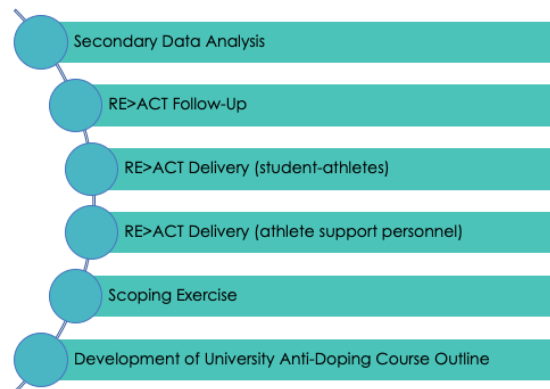
## EXECUTIVE SUMMARY

### Context

The inherent limitations of the detection-deterrence approach to anti-doping necessitate a shift in focus to doping prevention through education and training. However, the evidence base to underpin the design and delivery of bespoke prevention programs is lacking. Indeed, examples of evidence-based education interventions are notably absent from the anti-doping literature (Backhouse et al., 2016). Where interventions do exist, their scope is limited as they predominantly target elite athlete populations; consequently, they seemingly disregard the significance of athlete support personnel (ASP) for shaping athletes' anti-doping attitudes, experiences and behaviors towards doping (Backhouse, Erickson, & Whitaker, 2017) and neglect to provide sufficient education for individuals operating at the sub-elite levels; in particular, student-athletes (e.g., Erickson, McKenna, & Backhouse, 2015; Hallward & Duncan, 2018). In response, there is a need for designing, delivering and evaluating evidence-informed anti-doping education programs not only to athletes, but also to ASP. To be proactive in facilitating clean sport environments, education should be designed and delivered to both current and future athletes and ASP.

### Research Design

This six-phase program of research provides an evidence-based and evidence-supported anti-doping education program for delivery both in-person and online. It also provides an evidence-base for developing a university focused anti-doping course curriculum outline.



### Findings

This Interim Report presents the completed WP1 and WP5, along with descriptive findings for WP2 and sample demographics for WP3 and WP4. The completed version of WP2-4 will be presented in the Final Report, as will the university anti-doping course curriculum outline (WP6).

### Next Steps

Gather the final data (T5) for student-athlete and ASP RE>ACT program delivery and use the evidence gathered in work packages 1-5 to develop a university anti-doping curriculum outline.

## INTRODUCTION

The World Anti-Doping Agency (WADA) defines doping as “the occurrence of one or more of the anti-doping rules violations set forth in Article 2.1 through Article 2.10 in the Code” (WADA, 2015, p. 18), and prevention of the behavior is the key mandate of numerous national and international sport authorities (Bowers & Paternoster, 2017). While detection-deterrence methods constitute the main avenue for addressing doping, the Code now requires, “each Anti-Doping Organization to develop and implement education and prevention programs for Athletes, including youth, and Athlete Support Personnel” (WADA, 2015, p.14). Despite this instruction, there are a lack of field-based anti-doping intervention studies (Backhouse et al., 2016; Ntoumanis, Ng, Barkoukis, & 2014; Backhouse, McKenna, & Patterson, 2009) and research examining intervention effectiveness and efficacy is scarce (Hallward & Duncan, 2018). Moreover, attention and energy is predominantly channelled towards educating elite athletes. Meanwhile, ASP and athletes operating at the sub-elite levels commonly report receiving limited anti-doping education (e.g., Patterson, Backhouse, & Duffy, 2014; Erickson, Backhouse, & McKenna, 2015; Hallward & Duncan, 2018). In turn, athletes enter elite level competition with a restricted understanding of anti-doping rules and regulations; thus, putting them at increased risk of doping, including inadvertent violations.

Representing a proactive approach to anti-doping education delivery, the university setting offers an ideal platform for disseminating bespoke anti-doping education interventions given that it houses many of the next generation of elite (a) athletes and (b) athlete support personnel (ASP). Therefore, facilitating an opportunity to equip *future* elite athletes and ASP to play an active role in the pursuit of clean sport and simultaneously reducing the anti-doping risks associated with making the transition to the elite level (e.g., Wylleman, De Brandt, Van Rossem, & Kegelaers, 2016). Moreover, this approach can strengthen efforts to create an anti-doping culture beyond the traditional sport setting given that, realistically, not all university students will pursue a career in sport. Yet, they can take their anti-doping knowledge into whatever future setting they enter and, in turn, increase public understanding and involvement in doping deterrence (Barkoukis, Kartali, Lazarus, Haralambos, 2016) and establish a community-based approach to the pursuit of doping-free sport.



In addition to considering *when* anti-doping education is delivered, it is also necessary to consider *what* education is provided. Given the ongoing challenges that doping poses to the integrity of sport, alongside known limitations of the detection-deterrence approach (e.g., limited effectiveness of tests), individuals are being increasingly encouraged and expected to play an active role in discouraging banned substance use. This includes both athletes and ASP, given ASP are now recognized as key influencers in shaping athletes' doping attitudes and behaviors (Backhouse, Erickson, & Whitaker, 2017). Yet, preliminary research conducted by our team (Erickson, Backhouse, & Carless, 2017; Patterson & Backhouse, 2018) indicates that individuals are unprepared to play an active role in doping prevention and therefore, are unlikely to take action. This presents a critical issue in the pursuit of doping-free sport that needs addressing. In response, and with a vision for extending current anti-doping education practice, our research team was awarded funding by the International Olympic Committee (IOC) to test the feasibility of a clean sport bystander intervention, 'RE>ACT' (which stands for 'recognize' and 'take action') among university student-athlete populations.

RE>ACT draws upon established theories and program design (i.e., StepUP!; Bell, 2008) to encourage individuals to overcome the 'bystander effect' (i.e., an individual's likelihood to help decreases when passive bystanders are present in critical situations; Latane & Nida, 1981) and actively address substance use in sport. Addressing the bystander effect in this context is crucial because inaction harms (1) the doper, by allowing them to continue using a prohibited substance/method, (2) the 'bystander' (i.e., person who witnesses a critical situation), by putting them at risk of being deemed complicit to the doping behavior [i.e., committing an anti-doping rule violation (ADRV)], (3) the clean athlete, by threatening their right to participate in clean sport (Erickson, Patterson, & Backhouse, 2019), and (4) global sport, by questioning its integrity and thus, damaging its reputation.

To combat this, RE>ACT has been delivered to over 600 student-athletes in the US, UK and Canada. Preliminary results from pre-to-post intervention indicate that the RE>ACT intervention significantly increased student-athletes' likelihood to take responsibility to directly intervene by confronting or expressing concerns towards athletes they suspect are doping ( $F_{1, .519} = 196.53, p < .001, \eta^2 = .28$ ) as well as increased their perceived skills ( $F_{1, .519} = 275.28, p < .001, \eta^2 = .35$ ) and confidence ( $F_{1, .519} = 160.83, p < .001, \eta^2 = .24$ ) to confront such athletes about doping. Importantly, significant time (pre-post) x

intervention group interaction effects revealed that these increases in likelihood to directly intervene ( $F_{1,517} = 27.33, p < .001, \eta^2 = .05$ ), perceived skills ( $F_{1,517} = 17.95, p < .001, \eta^2 = .03$ ) and confidence ( $F_{1,517} = 10.44, p < .001, \eta^2 = .02$ ) to confront were greater following the RE>ACT intervention compared to the active-control group (i.e., compliance-based deterrence). Therefore, the findings suggest that the RE>ACT intervention appears more effective at increasing athletes' likelihood, perceived skills, and confidence, to intervene and confront athletes who are suspected of doping than the current conventional anti-doping education programs (i.e., compliance-based deterrence).

To further supplement this evidence, preliminary results from 107 student-athletes who completed measures at 3-month follow-up also indicated that the RE>ACT program significantly increased student-athletes' likelihood to take responsibility to directly intervene by confronting or expressing concerns towards athletes they suspect are doping ( $F_{2,68} = 20.50, p < .001, \eta^2 = .38$ ) as well as significantly increased their perceived skills ( $F_{1,48,50,41} = 33.18, p < .001, \eta^2 = .49$ ) and confidence ( $F_{1,43,50,08} = 11.12, p < .001, \eta^2 = .25$ ) to confront such athletes about doping over this time-period. Specifically, student-athletes reported higher likelihood to intervene as well as perceived skills and confidence to confront athletes taking specific substances at both post-intervention and 3-month follow-up compared to pre-intervention.

Importantly, significant 3 time (pre; post; 3-month follow-up) x 2 intervention group (RE>ACT; control) interaction effects revealed that these increases in likelihood to directly intervene ( $F_{1,67,181,70} = 9.27, p < .001, \eta^2 = .09$ ), perceived skills ( $F_{1,84,181,81} = 10.11, p < .001, \eta^2 = .09$ ) and confidence ( $F_{2,198} = 4.98, p < .01, \eta^2 = .05$ ) to confront were greater following the RE>ACT program compared to the active control group. Moreover, post-hoc analyses revealed that as expected there were no significant differences in either likelihood to intervene and perceived confidence pre-intervention, but importantly student-athletes in the RE>ACT program reported significantly higher likelihood to intervene and perceived confidence to confront compared to the control group at both post-intervention and 3-month follow-up. In terms of perceived skills, student-athletes in the control group actually reported higher perceived skills to confront pre-intervention; however, student-athletes in the RE>ACT program still reported significantly higher perceived skills to confront compared to the control group

at post-intervention and 3-month follow-up (although the difference at 3-month follow up was not significant. This is potentially due to the original differences in perceived skills to confront in favor of the control group at baseline).

Taken together, the findings suggest that the RE>ACT intervention appears to be more effective at increasing athletes' likelihood to intervene as well as enhance their perceived confidence and skills to confront athletes who are suspected of taking specific substances than the current conventional anti-doping education programs (i.e., compliance-based deterrence) which is evidenced both post-intervention and at 3-month follow-up.

Critically, the preliminary delivery of RE>ACT revealed (i) a lack of current anti-doping education provision to student-athletes and university students alike, and (ii) a desire amongst international universities for RE>ACT to be further delivered to university ASP (e.g., coaches, athletic trainers, strength and conditioning coaches). That is, the individuals who directly impact student-athletes' experiences and health in (and beyond) sport. However, delivery has also revealed a need to reduce the time-demands posed by the intervention. Accordingly, the proposed research project sought to: (a) identify the long-term influence of participating in RE>ACT and document (potential) behavior change (WP2), (b) test the feasibility and impact of a streamlined (one-session) version of RE>ACT amongst a cross-national sample of university student-athlete populations (US, UK, Canada) (WP3) and (c) extend the delivery of RE>ACT to a cross-national sample of university ASP populations (US, UK, Canada) (WP4). Additionally, we explored existing anti-doping e-learning platforms and university anti-doping courses to identify what forms of education currently exist (WP1) and the final step of this program of research will be to use the evidence gathered across the first five phases to inform the development of a university anti-doping course curriculum outline (WP6). Collectively, this project sought to address the current gap in university anti-doping education and practice.

## RESEARCH DESIGN & METHODS

Building on the initial delivery of RE>ACT to international student-athletes, this research project consisted of six phases (see Figure 1). The first five phases occurred

simultaneously and will collectively inform the sixth phase (to be presented in the Final Report).

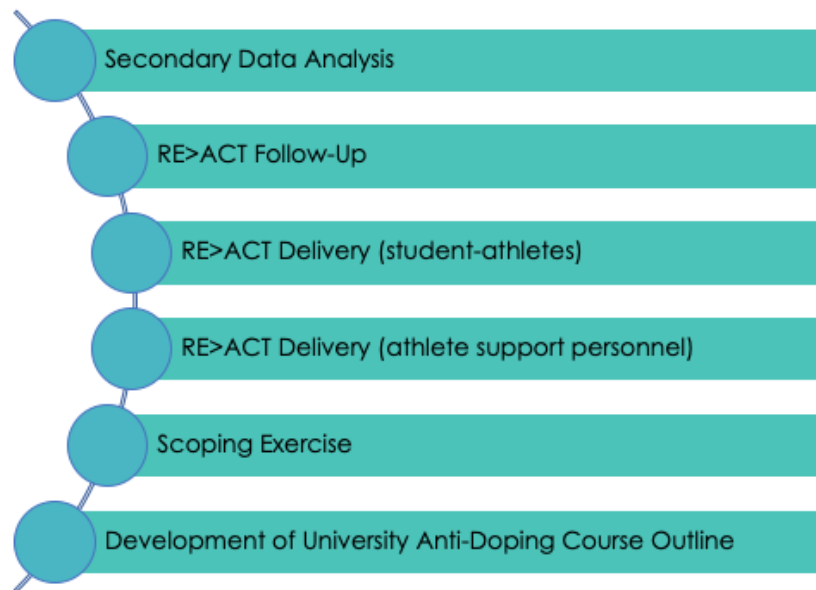


Figure 1. Phases of research

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## WP 1: SECONDARY DATA ANALYSIS

### **Phase 1**

Investigated and mapped existing online anti-doping education interventions, with particular attention directed towards determining: (a) what interventions exist, (b) target audience (e.g., athletes, ASP) and (c) content covered. This exercise will inform the transition of RE>ACT to an e-learning platform (e.g., ADeL) for the purposes of reaching a broader range of stakeholders.

### **Phase 2**

Identified and reviewed existing university level anti-doping courses (student-focused), with particular attention directed towards determining: (a) what courses exist, (b) target audience (e.g., specific subjects, levels), and (c) content covered.

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## WP 2: RE>ACT FOLLOW-UP

A final survey was disseminated (online via Qualtrics) to the original RE>ACT sample (n=302) in order to provide a time-point 4 measure. The survey included the opportunity

for student-athletes to self-report whether or not they had an opportunity to confront a problem situation (e.g., drugs, alcohol, bullying) since participating in the intervention.

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#### WP 3: RE>ACT DELIVERY (STUDENT-ATHLETES)

RE>ACT was delivered to student-athletes across the US, UK and Canada in order to determine the feasibility and impact of the one-session (120 min) design.

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#### WP 4: RE>ACT DELIVERY (ATHLETE SUPPORT PERSONNEL)

An adapted version of RE>ACT was delivered to ASP across the US and Canada in order to determine the feasibility and impact of the program within this important population.

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#### WP 5: SCOPING EXERCISE

Informed by the auditing exercise undertaken in WP 1, the research team engaged with identified university staff to discuss the feasibility of (and interest towards) introducing anti-doping centered content within existing (and/or future) academic structures. We were particularly interested in determining such things as: (a) which courses would be best suited to include the content, (b) how much time could feasibly be afforded to such content, (c) which academic levels to target (and when), (d) whether the university had any existing anti-doping focused content, and (e) whether the university would be interested in implementing such content if it was made available.

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#### WP 6: DEVELOPMENT OF UNIVERSITY ANTI-DOPING COURSE OUTLINE

Informed by WP 1-5, the final WP involves developing a university anti-doping curriculum outline, which will be presented in the Final Report.

### **RESEARCH OBJECTIVES AND HYPOTHESES**

Applying the situational model of bystander intervention, three work packages (2, 3 and 4) of this research project examine the feasibility of employing confrontation techniques as an effective self-regulation approach to deterring banned substance use

in student-athlete and athlete support personnel populations. Furthermore, the project seeks to understand the broader context of anti-doping education, including programs that are delivered within universities (WP1 and 5) and those that are made available online (WP1). The insights gathered will be used to inform the development of a university based anti-doping curriculum outline (WP6).

#### Objectives:

1. To investigate and map existing anti-doping education interventions, including a) online interventions and b) university anti-doping modules (WP1)
2. To evaluate the long-term and behavior change impact of the RE>ACT program (WP2)
3. To evaluate the effectiveness and feasibility of the refined RE>ACT program (WP3)
4. To evaluate the effectiveness and feasibility of RE>ACT ASP (WP4)
5. To conduct a needs analysis for anti-doping education within universities (WP5)
6. To develop a university based anti-doping education curriculum outline (WP6)

#### Desired Outcomes:

- Understand the landscape of university-based anti-doping education programs.
- Determine the opportunities that student-athletes and ASP perceive to be intervention-worthy.
- If noticeable gaps are identified in perceived opportunities to intervene, increase appreciation for intervention-worthy situations on their campuses.
- After increasing awareness, change perceptions of personal roles and responsibilities for intervening in these situations.
- Provide student-athletes and ASP with the skills, confidence and resources necessary to effectively intervene.
- Develop an evidence-informed university based anti-doping education curriculum outline.

#### Hypotheses:

- **WP 1:** Not Applicable.
- **WP 2:** At the additional longer-term RE>ACT follow-up, it is hypothesized that student-athletes in the RE>ACT program will have a sustained increase in self-reported likelihood to take responsibility to intervene as well as in perceived skills and confidence to intervene compared to their baseline scores.

- **WP 3:** It is hypothesized that student-athletes receiving the RE>ACT program will report greater increases in self-reported likelihood to take responsibility to intervene as well as in perceived skills and confidence to intervene after participating in RE>ACT compared to the control time period (i.e., 2 months pre-intervention).
- **WP 4:** It is hypothesized that ASP receiving the RE>ACT program will report greater increases in self-reported likelihood to take responsibility to intervene as well as in perceived skills and confidence to intervene after participating in RE>ACT compared to the control time period (i.e., 2 months pre-intervention).
- **WP 5:** Not Applicable.
- **WP 6:** Not Applicable.

**Work**

**Package 1:**

*Secondary Data*

*Analysis*



**Objective: To investigate and map existing anti-doping education interventions****Context**

Very little is known about the global landscape of online anti-doping education, including the existence and effectiveness of programs across different nations and sports. Collectively, this WP will provide valuable insight regarding the range of existing anti-doping education interventions. In turn, exposing opportunities to improve current practice and reducing the likelihood of duplication of effort (e.g., by replicating existing research interventions).

**Phase 1 – Online Programs Audit****Research Design**

Existing anti-doping e-learning platforms were identified and reviewed. To compile this list, the World Anti-Doping Agency platform, and the websites of National Anti-Doping Organizations (NADOs; <https://www.wada-ama.org/en/code-signatories-GovernmentFundedOrganizations>) and International Federations (IFs) (<https://www.olympic.org/sports>) were accessed and details regarding existing e-learning platforms were identified. Additionally, we reviewed independent International Federations (i.e., those not linked to the International Olympic Committee) and National Governing Body (NGB) anti-doping programs, in an attempt to provide a comprehensive overview of the current landscape of online anti-doping education.

The initial review was undertaken between February and March 2019. During this process, particular attention was directed towards determining a) what education interventions/resources exist, (b) target audience (e.g., athlete, athlete support personnel), (c) mechanisms of delivery (e.g., is it mandatory), (d) information dissemination (e.g., type of activities), (e) content (e.g., topics), (f) intended aim (e.g., develop athletes' knowledge), (g) available languages, and (f) point of access.

**Findings**

## **World Anti-Doping Agency (WADA) Online Anti-Doping Education**

As the global governing body for anti-doping, the World Anti-Doping Agency (WADA) hosts its own online education platform. The platform includes eight different education interventions, which target various key stakeholders (e.g., athletes, coaches, and parents; see Table 1). The platform is accessible via the WADA website, “education and prevention” tab, and includes a link to the overall Anti-Doping e-Learning platform (ADeL). The website outlines that ADeL provides courses for various stakeholders and includes the resources identified in Table 1. Once an individual accesses ADeL, they are asked to sign in or register, creating an individual account which allows them free access to ADeL resources. To create a login, individuals must provide numerous personal details (e.g., name, country, age, sport), however, a privacy policy is in place which informs individuals about data usage and their rights.

The ADeL platform provides five separate tailored education opportunities for athletes, coaches, sports physicians, anti-doping administrators, and parents. Resources for athletes, coaches, and anti-doping administrators can be accessed at any time once an individual has registered with ADeL. In comparison, access to the Sport Physicians Toolkit and Parents' Guide were restricted to certain populations, and not readily available through the ADeL hosting platform. Beyond, tailored resources, three generic interventions were available on the ADeL platform. These resources could be accessed at any time. WADA resources are not made mandatory for stakeholders (e.g., athletes, coaches, parents) by WADA.

Across the eight resources, the main method of information delivery was through written text and images (7/8, 88%), and knowledge was assessed through questions and answers (5/8, 63%). The content covered by the interventions differed but remained closely aligned to the topics highlighted in the International Standards for Education (WADA, 2019). The majority of interventions (6/8, 75%) reportedly aimed to provide information to stakeholders. Intended outcomes relating to attitudes, decision making, and behaviors were highlighted across three interventions, two of which specifically targeted athletes. While some resources are available in 35 languages, the reach of the tailored content was limited. For instance, the Sport Physician's Toolkit and ADO Kickstart resources were only available in English.

Table 1. World Anti-Doping Agency (WADA) Online Anti-Doping Education.

Name of education tool	Target audience	When is it delivered? Mandatory?	How is information disseminated?	Content	Aim	Language	Link
<b>The Athlete Learning Program about Health and Anti-Doping (ALPHA)</b>	Athletes	-Can be accessed at any time -Anyone can access by registering -Not mandatory	-Written information -Videos -Questions & answers -Web links	-The doping control process -Whereabouts -Therapeutic Use Exemptions (TUEs) -Results management -Medical reasons to stay clean -Ethical reasons to stay clean -Practical help to stay clean -How to deal with pressure	ALPHA gives athletes information about the dangers of doping and the importance of anti-doping controls and promotes positive attitudes to avoiding doping.	Croatian English French Japanese Spanish	<a href="https://adel.wada-ama.org/">https://adel.wada-ama.org/</a>
<b>Coach True</b>	Coaches	-Can be accessed at any time -Anyone can access by registering -Not mandatory	-Written information -Simulations -Questions & Answers -Assessment	-Health consequences -Accountability -Whereabouts -TUEs -Results management -Decision Making	To provide anti-doping education for coaches of elite and recreational-level athletes.	English French Khmer Indonesian Malay Polish Spanish Thai Vietnamese	<a href="https://adel.wada-ama.org/en/course/163/coachtrue">https://adel.wada-ama.org/en/course/163/coachtrue</a>
<b>Sport Physician's toolkit</b>	Sport Physicians	-Only for certain people (access denied)	-Written information -Quiz	-The doping control process	Sport Physician's Tool Kit is a course covering anti-	English	<a href="https://adel.wada-ama.org/en">https://adel.wada-ama.org/en</a>

		-Can't access just by registering		-Doping and sports medicine ethics -Health consequences of doping -The prohibited list and TUEs -Biological passport -Introduction to gene doping -Identifying and prescribing prohibited drugs -IOC needle policy -Bringing medication to the games	doping modules tailored for physicians and other medical personnel.		n/node/310/take
<b>ADO Kickstart</b>	Anti-doping administrators	-Can be accessed at any time -Anyone can access by registering -Not mandatory	-Written information -Glossary -Acronyms -Reference Matrix -Web links -Videos	-Education -Intelligence and investigations -TUEs -Testing -Results management -ADAMS	To support administrators in delivering their core anti-doping duties on a daily basis.	English	<a href="https://adel.wada-ama.org/en/course/105/ado-kickstart">https://adel.wada-ama.org/en/course/105/ado-kickstart</a>
<b>Parents' guide</b>	Parents of all levels of athletes from beginner to elite.	-Only for certain people -Can't access just by registering	-Written information -Web links -Videos	-Role -Promoting good values -Nutrition -Supplement risks -Doping risk -Vulnerability and signs and symptoms -Prevention -The doping control process	To provide an anti-doping reference guide/booklet for parents seeking more information to ensure healthy athletic development and prevent the use of prohibited substances.	Croatian English French Spanish	<a href="https://adel.wada-ama.org/en/node/306/take">https://adel.wada-ama.org/en/node/306/take</a>

				-Actions to take			
<b>Play true challenge</b>	Targets youth under 19	-Can be accessed at any time -Anyone can access with Adobe Flash -Not mandatory	-Interactive online game	-Decision making	To support youth decision-making skills regarding doping in sport.	Arabic Chinese Dutch English French Italian Japanese Portuguese Russian Spanish	<a href="http://ptchallengewada-ama.org/">http://ptchallengewada-ama.org/</a>
<b>Play true quiz</b>	Anyone interested in learning more about anti-doping and protecting the values of clean sport	-Can be accessed by registering -Can be accessed at any time -Not mandatory	-Question & Answers -Written information	-Anti-doping rule violations -Testing procedures -TUEs -Whereabouts	To familiarize audiences with clean sport messages.	35 languages*	<a href="https://quiz.wada-ama.org/">https://quiz.wada-ama.org/</a>
<b>Play True Youth Quiz</b>	Youth athletes	-Can be accessed by registering -Can be accessed at any time -Not mandatory	-Question & Answers -Written information	-Testing procedures -Checking medication -About Anti-doping	To familiarize audiences with clean sport messages.	35 languages*	<a href="https://quiz.wada-ama.org/youth/">https://quiz.wada-ama.org/youth/</a>

\*Arabic, Bulgarian, Chinese, Creole, Croatian, Czech, Dutch, English, Estonian, Farsi, Finnish, French Georgian, German, Greek, Hungarian, Icelandic, Italian, Japanese, Khmer, Korean, Latvian, Malay, Mongolian, Norwegian, Polish, Portuguese, Romanian, Russian, Slovak, Slovene,

Spanish, Thai, Turkish, Vietnamese

## NADOs

### Overview

A list of 141 NADO websites were accessed via the WADA website (<https://www.wada-ama.org/en/code-signatories>), and a total of 16 NADOs with online education resources were found. Therefore, less than 12% of organizations provide online access to interventions hosted in their native language and are designed and developed at a local level. Across the 16 NADOs, 35 interventions were identified (see Table 2), 17 of which targeted a specific audience (e.g., athletes) and 18 of which targeted a broad range of stakeholders (e.g., athletes and athlete support personnel). Thirty-four interventions were available via the respective NADOs main website. Only one intervention was accessed from an external site (i.e., University website). While the accessibility of resources was clear, NADOs did report potential operating system errors.

### When was the intervention delivered?

Thirty-four interventions were readily available online, however, one of the interventions required individuals to have previously completed a separate anti-doping course. Eight interventions (24%) required individuals to register for the program to create a personal account which allowed them to access the training at any time. Thirty-one interventions (91%) appeared to be free of charge while, one coach-focused intervention required participants to purchase the course. Limited information was provided for the three remaining interventions. Four interventions were reported as mandatory for athletes (n=3) and anti-doping advisors (n=1). One NADO reported that their four resources could be used as mandatory training for stakeholders prior to international competitions.

### What are the delivery methods used?

Out of the 35 NADO reported interventions, 26 (74%) of the resources included multimedia information and questions and answers (e.g., quiz) to disseminate anti-doping information to stakeholders. In addition, 23 NADOs (66%) used videos to demonstrate skills. Beyond this, interactive presentations (e.g., webinars; n=4), links to alternative resources (n=3), case studies (n=2), downloadable/printable materials (n=2), and written information (n=2) were used to inform stakeholders on anti-doping principles.

### **What content is provided?**

A range of topics were reported across the 35 online interventions, which acknowledged the majority of topics identified in the International Standards for Education (ISE; WADA, 2019). It is important to note, that "Speaking up to share concerns" was not addressed by any NADO online anti-doping education resource. The main topics included in anti-doping education across all stakeholders were the testing process (n=28), supplements and medications (n=18), and the Prohibited List (n=17). However, differences were noted across target populations. For instance, resources which targeted sport physicians (3/35, 9%) predominantly provided information on substances and methods (including supplements and medications; n=4) and TUEs (n=2). Whereas, athlete-focused interventions (6/35, 17%) provided information on the doping control process (n=7), substances and methods (n=5), and whereabouts procedures (n=3).

### **What is the aim of the intervention?**

The aims of 32 interventions (94%) were reported by the respective NADO. The majority (25/35, 71%) of interventions aimed to enhance stakeholder knowledge of anti-doping principles and practices. However, limited information was provided as to how knowledge was measured. Only seven NADOs (44%) reported how knowledge was measured (i.e., assessment). Of these NADOs, four interventions required stakeholders to retake the education and assessment when changes were made to WADA rules and regulations (i.e., WADA Code), and two interventions required stakeholders to retake training every two years.

Six NADOs reported that their interventions had wider aims which included influencing athletes' and ASPs' values and behavior in relation to anti-doping. However, no formal evaluation methods were identified.

Two NADOs identified that their aim was to extend the reach of anti-doping information to relevant stakeholders, and 11 NADOs identified completion rates of the course as a method of evaluation.



**How long does it take to complete?**

The length of 15 interventions (44%) were reported. The majority (7/15, 47%) of these interventions were reported to take less than 30 minutes to complete. However, three NADOs appeared to provide more in-depth training systems which reportedly took over an hour to complete (70 minutes, 85 minutes, and 90 minutes). Overall, the most common format (5/15, 33%) was seven modules which took three-four minutes each to complete.

Table 2. National Anti-Doping Organization (NADO) online anti-doping education programs<sup>1</sup>.

Organization	Name of education tool	Target audience	How is it delivered?	How is the information disseminated?	Content	Aim	Language	Link
<b>Australian Sports Anti-Doping Authority (ASADA)</b>	Level 1 Anti-Doping Course	All	-Page can be accessed at any time -Not mandatory -No registration necessary -Apart from courses, which require a login	-Multi-media information -Videos -Questions & Answers	-Intelligence & investigation- Anti-doping overview -Prohibited substances and methods -Doping control process -Supplements -TUEs	To develop knowledge of anti-doping	English	<a href="https://elearning.asada.gov.au/">https://elearning.asada.gov.au/</a>
	Level 2 Anti-Doping Course	Athletes and Athlete Support Personnel (ASP)	Pre-requisite for this course is the successful completion of the Level 1 course. Not mandatory, however, a certificate is issued upon completion and expires on 31st	-Multi-media information -Videos -Questions & Answers		To provide athletes and athlete support personnel with the latest information on anti-doping.	English	<a href="https://elearning.asada.gov.au/enrol/index.php?id=332">https://elearning.asada.gov.au/enrol/index.php?id=332</a>

<sup>1</sup> Supplemental information can be found in Appendix L.

			December each year.					
Coaching course	Coaches and other ASP	Supplementary material to level on ASADA e-learning.	-Multi-media information -Videos -Questions & Answers	-Needs analysis -Influence of the coach on athletes -How can a coach prepare an athlete for doping control procedures -Identifying at risk athletes -Coaching responsibilities	To assist coaches to understand their obligations in anti-doping.	English	<a href="https://elearning.asada.gov.au/enrol/index.php?id=85">https://elearning.asada.gov.au/enrol/index.php?id=85</a>	
Gold Coast Commonwealth Games 2018	Athletes competing at the Games, or anyone who is interested in the anti-doping rules of the Games	Current status: This course is not yet available to enrol in; please check back at the end of the week	-Multi-media information -Questions & Answers	-Doping control -In-competition periods -Whereabouts requirements for the Games -TUEs	To outline the rules for athletes and support personnel at the 2018 Gold Coast Commonwealth Games.	English	<a href="https://elearning.asada.gov.au/enrol/index.php?id=337">https://elearning.asada.gov.au/enrol/index.php?id=337</a>	
2018 PyeongChang Winter Olympic and	Athletes competing at the Games, or anyone who is	<b>Recommended</b> for all athletes representing Australia at the 2018	-Multi-media information -Questions & Answers -Quick downloads	-Doping control -In-competition periods -Whereabouts requirements for the Games	To outline the rules for athletes and support personnel at the 2018 PyeongChang	English	<a href="https://elearning.asada.gov.au/enrol/index.php?id=324">https://elearning.asada.gov.au/enrol/index.php?id=324</a>	

	Paralympic Games	interested in the anti-doping rules of the Games	PyeongChang Games.	-Links to supporting websites.	-TUEs	Winter Olympic and Paralympic Games		
	Medical Support Personnel Anti-Doping Course	Medical practitioners and athlete medical support personnel.	Available online, not mandatory.	-Multi-media information -Videos -Questions & Answers	-The role of athlete support personnel in anti-doping -The World Anti-Doping Code -Anti-Doping Rule Violations -Penalties -How your actions can result in an athlete being sanctioned -Common Treatments for athletes -Medications & Supplements -TUEs	To ensure all practitioners who treat sports people have a basic understanding of the anti-doping rules and how these affect not only the athletes, but also support staff.	English	<a href="https://elearning.asada.gov.au/course/view.php?id=194">https://elearning.asada.gov.au/course/view.php?id=194</a>
	Learning Update – Athlete Biological Passport	Athletes	Available online, not mandatory.	-Interactive presentation	-Biological passport	This learning update provides details about the Athlete Biological Passport testing program.	English	

Learning Update - The 2015 Code	This course is aimed at anyone who has completed the Level 1 course prior to 1 January 2015.	Available online, not mandatory.	-Multimedia information -Website links	-How the changes in the 2015 World Anti-Doping Code came about -The changes in the 2015 World Anti-Doping Code -How the changes affect athletes and athlete support personnel.	This learning update covers the major changes to the 2015 Code and how they impact athletes and athlete support personnel.	English	<a href="https://elearning.asada.gov.au/course/view.php?id=84">https://elearning.asada.gov.au/course/view.php?id=84</a>
Learning Update – Supplements in sport	Athletes	Available online, not mandatory.	-Interactive presentation -Links to additional resources	-The dangers of supplement use	This learning update discusses the dangers of using nutritional supplements as an athlete.	English	<a href="https://elearning.asada.gov.au/course/view.php?id=16">https://elearning.asada.gov.au/course/view.php?id=16</a>
Learning Update – ASADA's new legislative powers	Athletes and ASP	Available online, not mandatory.	-Multimedia information	-Changes which have been made to the Australian Sports Anti-doping authority act, 2006 -Understand how the new powers will be utilised and when they will be used.	This learning update provides a brief overview of the new legislative powers provided to ASADA by the Australian Parliament.	English	<a href="https://elearning.asada.gov.au/course/view.php?id=14">https://elearning.asada.gov.au/course/view.php?id=14</a>

<b>Austria NADA</b>					-Understand what penalties could be applied for non-compliance and who has the final say on ADRVs			
	Learning Update – Intelligence and investigations	Athletes, coaches, trainers, medical personnel, parents and partners	Available online, not mandatory.	-Interactive presentation -Case studies	-How ASADA investigates ADRVs -Who can ASADA investigate -How to find out more	This learning update discusses the intelligence and investigations functions of ASADA.	English	<a href="https://elearning.asada.gov.au/course/view.php?id=17">https://elearning.asada.gov.au/course/view.php?id=17</a>
	Anti-Doping License	Athletes	The course can be used voluntarily (information and awareness raising for the participants) or mandatory (e.g. for a proven anti-doping training before international competitions, cadre admission or licensing).	-Multi-media information -Videos -Questions & Answers	-Rights and responsibilities -Dietary supplements -Prohibited substances and methods -Doping control process -Results management	To provide compact information on the most important topics of anti-doping work	German	<a href="https://lizenz.nada.at/online/login/index.php">https://lizenz.nada.at/online/login/index.php</a>

Anti-Doping License	Physicians and medical professionals	The course can be used voluntarily (information and awareness raising for the participants) or mandatory (e.g., for a proven anti-doping training before international competitions, cadre admission or licensing).	<ul style="list-style-type: none"> <li>-Multi-media information</li> <li>-Videos</li> <li>-Questions &amp; Answers</li> </ul>	<ul style="list-style-type: none"> <li>-The prohibited list</li> <li>-TUEs</li> <li>-Practical examples</li> <li>-Doping control process</li> </ul>	To provide compact information on the most important topics of anti-doping work	German	<a href="https://www.nada.at/de/praevention/online/marketshow-anti-doping-lizenz">https://www.nada.at/de/praevention/online/marketshow-anti-doping-lizenz</a>
Anti-Doping License	Trainers, Coaches, and Carers	The course can be used voluntarily (information and awareness raising for the participants) or mandatory (e.g., for a proven anti-doping training before international competitions, cadre admission or licensing).	<ul style="list-style-type: none"> <li>-Multi-media information</li> <li>-Videos</li> <li>-Questions &amp; Answers</li> </ul>	<ul style="list-style-type: none"> <li>-General information</li> <li>-Rights and obligations</li> <li>-Dietary supplements</li> <li>-Doping control process</li> <li>-Substances and methods</li> <li>-Results management</li> </ul>	To provide compact information on the most important topics of anti-doping work	German	<a href="https://www.nada.at/de/praevention/online/marketshow-anti-doping-lizenz">https://www.nada.at/de/praevention/online/marketshow-anti-doping-lizenz</a>
Anti-Doping License	Students-1 <sup>st</sup> year to under 18s	The course can be used voluntarily (information and	-Test	<ul style="list-style-type: none"> <li>-Prohibited list</li> <li>-Supplements and methods</li> <li>-TUEs</li> </ul>	To provide compact information on the most	German	<a href="https://www.nada.at/de/praevention/online/marketshow-anti-doping-lizenz">https://www.nada.at/de/praevention/online/marketshow-anti-doping-lizenz</a>

			awareness raising for the participants) or mandatory (e.g., for a proven anti-doping training before international competitions, cadre admission or licensing).		-Doping control process -Whereabouts	important topics of anti-doping work		etshow-anti-doping-lizenz
<b>Canada</b>  <b>Canadian Centre for Ethics in Sport (CCES)</b>	True Sport Clean	Athletes (who fall under Canadian anti-doping program); Canadian Football League (CFL; tailored version as non-WADA); Canadian Premier League; ASP	-Mandatory yearly for all national athlete pool (NAP) athletes; USport; CFL; Canadian Hockey League -Complete prior to start of each respective season	-Multi-media information -Interactive presentation -Videos	-Intro to values based (ethics) sport and education -Prohibited list -Supplements -Steroids -Doping control -Violations & sanctions -Athletes rights & responsibilities -Assessment at end (catered to mastery)	Promote values in sport and address the various components of the CADP.	English French	<a href="https://cces.ca/e-learning">https://cces.ca/e-learning</a>
<b>Denmark</b>	Clean Winner	Athletes; support staff		-Multimedia information -Videos	-Doping control -Rules and regulations -Supplements	To help individuals gain control of their basic	Danish	<a href="https://renvider.dk/Course">https://renvider.dk/Course</a>



<b>Anti-Doping Denmark (ADD)</b>				-Question & answers	-Whereabouts -Prohibited list -Health consequences -TUEs	knowledge of anti-doping.		
<b>Finnish Center for Integrity in Sports</b>	Puhtaasti Paras	Athletes and ASP	Not reported	-Multimedia information -Videos -Question & answers	-Exemptions -Health consequences -Doping control & testing procedures -ADRVs -Supplements -Doping test pool -Prohibited substances and methods	To ensure that athletes and their support staff can learn and make sure they know about anti-doping.	Finnish	<a href="https://puhtaastiparas.fi/">https://puhtaastiparas.fi/</a>
<b>Germany Nationale Anti-Doping Agentur (NADA)</b>	E-learning	Athletes, coaches, Parents, representative, teacher, supervisor	-accessed at any time -No registration necessary -Not mandatory	-Multimedia information -Videos -Question & answers	-What is doping? -Doping control -Dietary supplements -Rights and duties -Prohibited substances and methods	To provide important answers and valuable tips for every level of performance.	German	<a href="http://www.gemeinsam-gegen-doping.de/">http://www.gemeinsam-gegen-doping.de/</a>
<b>Ireland</b>	Anti-Doping Tutor Training	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	English	<a href="https://elearning.sportireland.ie/login/index.php">https://elearning.sportireland.ie/login/index.php</a>

<b>Sport Ireland</b>	Anti-Doping Sample Collections Procedures - Urine and Blood	Athletes and ASP	-Online -Not mandatory	-Multi-media information -Videos -Written information -Question & answers	-Anti-doping rule violations -Testing procedures blood & urine -How to check medications -TUEs -The risk of supplements and herbal remedies -Consequences of doping	To better understand anti-doping	English	<a href="https://elearning.sportireland.ie/login/index.php">https://elearning.sportireland.ie/login/index.php</a>
<b>The Anti-Doping Authority Netherlands</b>	Doping Autoriteit	Athletes and ASP	-Page can be accessed at any time -Registration is necessary but don't have to be with a certain sports organization -Not mandatory	-Question & answers -Written information -Videos	-General anti-doping information -Testing procedures -Doping control process -Consequences	To provide information to athletes and sport coaches through a platform that is accessible in order to support clean sport.	Dutch	<a href="https://elearning.dopingautoriteit.nl/#/home">https://elearning.dopingautoriteit.nl/#/home</a>
<b>New Zealand Drug Free Sport NZ (DFSNZ)</b>	E-learning level one	Athletes and ASP	-Athletes require their completion to be registered by DFSNZ -School student, teacher or support	-Multi-media information -Videos -Questions & answers	-Prohibited substances and methods -Medication & supplement use -Testing process	To ensure that as many athletes, coaches and support personnel as possible get access to anti-doping education.	English	<a href="https://drugreesport.org.nz/what-we-do/education/e-learning/">https://drugreesport.org.nz/what-we-do/education/e-learning/</a>

			personnel- not mandatory					
E-learning level two	Athletes and ASP who have completed level one or attended a face-to-face seminar in the last year.	-Athletes require their completion to be registered by DFSNZ -School student, teacher or support personnel- not mandatory	-Multi-media information -Videos -Questions & answers	-It recaps key anti-doping messages and provides updates on need-to-know information.			English	<a href="https://drugreesport.org.nz/what-we-do/education/e-learning/">https://drugreesport.org.nz/what-we-do/education/e-learning/</a>
Coaches Program	Coaches	-Initial home page accessible to everyone at any time, but courses require registration -DFSNZ recommends all coaches, managers and parents complete the Coaches e-learning program, not mandatory	-Multi-media information -Videos -Questions & answers	-Roles and responsibilities -Influences on an athlete -Doping control process	The Coaches program provides practical ideas for coaches to create clean sporting environments in which to support their athletes.		English	<a href="https://drugreesport.org.nz/what-we-do/education/e-learning/">https://drugreesport.org.nz/what-we-do/education/e-learning/</a>

<p><b>Norway</b></p> <p><b>Anti-Doping Norway (ADNO)</b></p>	<p>Real Winner</p>	<p>Athletes, coaches, managers and their support staff.</p>		<ul style="list-style-type: none"> <li>-Multimedia information</li> <li>-Videos</li> <li>-Question &amp; answers</li> </ul>	<ul style="list-style-type: none"> <li>-Doping control procedures</li> <li>-The prohibited list</li> <li>-Breach of anti-doping regulations</li> <li>-Consequences to health</li> <li>-Dietary supplements</li> <li>-TUEs</li> <li>-Whereabouts</li> </ul>	<p>To provide elementary anti-doping training in a fun and accessible way.</p>	<p>English Norwegian</p>	<p><a href="https://www.renutover.no/">https://www.renutover.no/</a></p>
<p><b>Russia</b></p> <p><b>Russian Anti-Doping Agency (RUSADA)</b></p>	<p>Anti-doping course</p>	<p>Athletes and coaches, doctors and pharmacists, parents and other interested persons.</p>	<ul style="list-style-type: none"> <li>-Home log in page requires registering</li> <li>-Login page can be accessed at any time</li> <li>-Not mandatory</li> </ul>	<ul style="list-style-type: none"> <li>-Multi-media information</li> <li>-Videos</li> <li>-Questions &amp; answers</li> </ul>	<ul style="list-style-type: none"> <li>-General information</li> <li>-Rights and responsibilities</li> <li>-Nutritional supplements</li> <li>-Prohibited substances and methods</li> <li>-Doping control process</li> <li>-Results management</li> </ul>	<p>To increase the awareness of athletes about the most important anti-doping issues.</p>	<p>Russian</p>	<p><a href="https://rusada.triagonal.net/online/login/index.php">https://rusada.triagonal.net/online/login/index.php</a></p>
<p><b>Slovenia</b></p> <p><b>Slovenian Anti-Doping</b></p>	<p>Together against doping</p>	<p>Athletes, ASP, others</p>	<ul style="list-style-type: none"> <li>-Home log in page requires registering</li> <li>-Login page can be accessed at any time</li> </ul>	<ul style="list-style-type: none"> <li>-Multi-media information</li> <li>-Videos</li> <li>-Questions &amp; answers</li> </ul>	<ul style="list-style-type: none"> <li>-General information</li> <li>-Rights and Responsibilities</li> <li>-Nutritional supplements</li> </ul>	<p>To provide everyone with the opportunity to learn about the key areas of anti-doping.</p>	<p>Slovak</p>	<p><a href="https://sada.triagonal.net/online/login/index.php">https://sada.triagonal.net/online/login/index.php</a></p>

<b>Organization (SLOADO)</b>			-Not mandatory		-Prohibited substances and methods -Doping control process -Results management			
<b>Swedish NADO</b>	Real Winner	Athletes and ASP		-Multimedia information -Videos -Question & answers	-Doping control -The prohibited list -ADRVs -Consequences to health -Dietary supplements -TUEs -Whereabouts	The e-education is based on a tool developed by Anti-doping Norway in cooperation with Anti-Doping Denmark. The Swedish version has been further developed and translated to capture Swedish conditions and contains updated information according to new international rules.	English Swedish	<a href="http://www.renvinnare.se/">http://www.renvinnare.se/</a>
<b>Switzerland Anti-doping Schweiz</b>	Clean Winner	Young athletes	-Not mandatory -Can be accessed at any time through	-Multi-media information -Videos	-Doping control -Breach of AD regulations -Dietary Supplements	To provide accurate information upon clean	French German Italian English	<a href="https://www.antidoping.ch/en/prevention/mobile-learning-">https://www.antidoping.ch/en/prevention/mobile-learning-</a>

			creating an account	-Questions & answers	-Whereabouts -The prohibited list -Consequences-TUEs	Sports and doping.		programs/clean-winner
<b>UK Anti-Doping (UKAD)</b>	Anti-doping advisor course	Anyone wishing to become an Accredited Advisor.	-Page accessible at any time by anyone through following link -"Purchasing" free course requires registering -Mandatory if wishing to become a UKAD Accredited Advisor	-Multi-media information -Videos -Questions & answers	-Background information -Ethics and values -The anti-doping rules -Helping athletes to be clean -Helping athletes to stay clean -The testing process -When it goes wrong	By completing this program individuals should be able to do the following: Recall the main anti-doping responsibilities that athletes have. Competently provide basic anti-doping advice. Identify athletes, or ASP, who may need advice. Be a point of contact for anti-doping matters in your sporting environment	English	<a href="http://ukad.coachwisehub.com/store/207350-accredited-advisor-assessment#description">http://ukad.coachwisehub.com/store/207350-accredited-advisor-assessment#description</a>
	Coach Clean	Coaches	-Page accessible at any time by anyone through following link	-Videos -Case studies -Assessment	-Changes to WADA code 2015 -ADRVs -Testing process	To help coaches support clean sport, improve their understanding of anti-doping	English	<a href="http://ukad.coachwisehub.com/store/299392-coach-clean-v3-2">http://ukad.coachwisehub.com/store/299392-coach-clean-v3-2</a>

			-Purchasing £15 course requires registering -Not mandatory, but if taken, requires assessment re-taking every 2 years	-Downloadable guides and information	-Ethics and values	and what this means for coaches and athletes, better prepare athletes for testing, explain the wide-reaching consequences of an ADRV, promote clean sport in their coaching environment.		
<b>USADA</b>	Athletes' Express	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	CANNOT ACCESS INFORMATION	
	Coach's Advantage	Coaches: National team coaches (or equivalent)	-Online -Not mandatory	-Multimedia information -Quiz	-WADA Prohibited List and 2015 Code changes -The sample collection process -TUEs -Whereabouts	To support coaches in keeping sport clean by helping athletes understand and act upon their anti-doping responsibilities	English	<a href="https://www.usada.org/resources/coach/">https://www.usada.org/resources/coach/</a>
	HealthPro Advantage	Physicians of all specialties, including	-Online -CME Credits Offered: 1.25 -Not mandatory	-Information not provided	-Anti-Doping Roles & Responsibilities -The WADA Prohibited List	To provide current anti-doping specific information for	English	<a href="https://med.stanford.edu/cme/cours">https://med.stanford.edu/cme/cours</a>

<p>Sports Medicine and Orthopaedics, as well as all other health and medical professionals that may interact with athletes.</p>			<ul style="list-style-type: none"><li>-TUEs</li><li>-Dietary Supplements</li><li>-The Sample Collection Process</li><li>-Major Games Anti-Doping Specific Information</li></ul>	<p>physicians and other health and medical professionals</p>		<p>es/online/USADA.html</p>
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## IFs

### Overview

A list of 34 summer and winter International Federations (IFs) websites were accessed via the WADA website (<https://www.wada-ama.org/en/code-signatories>), and a total of six IFs (17%) with online education resources were found (see Table 3). The six IFs provided one intervention each, which predominantly targeted athletes (4/6, 67%), the remaining two IFs reportedly targeted athletes and ASP. All interventions were accessed from the respective IF websites, and normally were found under the anti-doping information tab or sporting integrity section.

### When was the intervention delivered?

Five interventions (83%) were readily available online, however, three interventions required individuals to be members of the IF (e.g., FIVB player-number) in order to access the education resource. One IF did not currently have any resources available but provided an online platform which hosted courses for stakeholders throughout the year. None of the interventions were highlighted as mandatory for stakeholders.

### What delivery methods were used?

Five of the IFs reported the way in which information was disseminated. Four (80%) interventions used videos, written information, and questions and answers (e.g., quiz). Beyond this, multi-media information (i.e., computer information represented through audio, video, and animation; n=1, 20%), links to alternative resources (n=2, 40%), and downloadable/printable materials (n=1, 20%) were used to disseminate information to athletes and ASP.

### What content is provided?

IFs covered a range of topics within their online anti-doping education. No specific differences were noted in the content tailored to athletes or "athletes and ASP". The main topics addressed were the consequences of doping (n=6), doping control process (n=5), TUEs (n=5), supplements and medications (n=4), and the prohibited list (n=4). Beyond this, some IFs provided information on rights and responsibilities of stakeholders (n=2), ADRVs (n=3), whereabouts (n=3), and an overview of doping and doping prevention (n=2). Similar to NADOs, "Speaking up to share concerns" was not addressed by any IFs online anti-doping education.

**What is the aim of the intervention?**

Short-term aims such as awareness building and developing knowledge were acknowledged by three IFs (50%). The remaining three IFs reported broader long-term aims such as maintaining the integrity of the sport.

**Language**

IFs' online anti-doping education was offered in a variety of languages, with the exception of two organizations who offered their platform strictly in English. Notably, all interventions were available in English. Due to the nature of the online programs (e.g., interactive system), translation functions available through Google Chrome browser were not supported.

Table 3. Summer and Winter Olympic Sport Federations online anti-doping education programs.

Organization	Name of education tool	Target Audience	When is it delivered? Mandatory?	How is the information disseminated?	Content	Aim	Language	Link
<b>International Association of Athletics Federation</b>	Real Winner	Athletes		<ul style="list-style-type: none"> <li>· Multimedia information</li> <li>· Videos</li> <li>· Questions &amp; answers</li> </ul>	<ul style="list-style-type: none"> <li>· Health Consequences</li> <li>· Doping Control</li> <li>· TUEs</li> <li>· Whereabouts</li> <li>· Supplements</li> <li>· Prohibited List</li> <li>· ADRVs</li> </ul>	To explain that it is possible to be a winner without drugs.	German English French Spanish Italian	<a href="https://www.realwinner.org/Account/Login">https://www.realwinner.org/Account/Login</a>
<b>International Football Federation</b>	Say no to doping	Athletes	<ul style="list-style-type: none"> <li>· Can be accessed at any time</li> <li>· No registration necessary</li> <li>· Not mandatory</li> </ul>	<ul style="list-style-type: none"> <li>· Written information</li> <li>· Question &amp; Answers</li> </ul>	<ul style="list-style-type: none"> <li>· What is doping?</li> <li>· Consequences of doping?</li> <li>· Doping prevention</li> </ul>	To use awareness to combat doping.	English	<a href="https://no-doping.fifa.com/">https://no-doping.fifa.com/</a>
<b>International Equestrian Federation (FEI)</b>	FEI Campus	Athletes, Officials, and Athlete entourage	Courses are released through the year via the online system.	Information not provided	<ul style="list-style-type: none"> <li>· Rules</li> <li>· Definitions of doping</li> <li>· ADRVs</li> <li>· Prohibited Substances and Methods List</li> <li>· Supplements</li> <li>· TUEs</li> <li>· Doping Control procedures</li> <li>· Results management</li> <li>· Consequences of</li> </ul>	To build the values necessary to maintain a doping-free environment.	English	<a href="https://campus.fei.org/">https://campus.fei.org/</a>

					doping (i.e., sanctions) · Rights and responsibilities			
<b>International Tennis Federation (ITF)</b>	ITF Knowledge	Junior athletes	· Those without IPIN can still view program · Log in page can be accessed at any time	· Written information · Videos · Questions & Answers	· Doping control process · TUEs · Consequences of doping	To maintain the integrity of tennis and protect the health and rights of all tennis players	English French Spanish	<a href="https://education.itftennis.com/#/entry">https://education.itftennis.com/#/entry</a>
<b>International Volleyball Federation (FIVB)</b>	Play Clean	Athletes and athlete support personnel	· Requires valid FIVB player-number · Can be accessed at any time by these people	· Videos · Questions & Answers · Written information · Links to resources	· Doping control procedures · Consequences to health · TUEs · ARDVs · The prohibited list · Dietary supplements · Whereabouts	To provide information about rights and responsibilities in Anti-Doping.	English Dutch Spanish French Italian Portuguese Russian	<a href="http://playclean.fivb.com/Home/Cultures">http://playclean.fivb.com/Home/Cultures</a>
<b>World Rugby</b>	Be super natural - Keep Rugby Clean	Athletes	· E-learning program/educational resource section requires a World Rugby Passport account · Can be accessed at any time by these people	· Written information · Videos · Downloadable resources · Links to websites	· Doping control · Whereabouts · TUEs · Supplements and medications · WADA prohibited list · Consequences of doping · Responsibilities	To protect Rugby from doping for the generations of people who play the game.	English French Spanish Italian Portuguese Japanese Georgian Fijian Chinese Tongan Romanian Samoaan Russian	<a href="https://keeprugbyclean.worldrugby.org/">https://keeprugbyclean.worldrugby.org/</a>

		<ul style="list-style-type: none"><li>· Everything else on page accessible to anyone</li><li>· Not mandatory</li></ul>						
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## Additional Online Anti-Doping Education Resources

### Overview

Beyond the WADA Code Signatories (namely NADOs and IFs) discussed in the previous sections, a number of relevant anti-doping education resources exist at an international and national level; seven specific organizations have been identified through comprehensive Google searches, and are discussed in this section (see Table 4). Four of these organizations were IFs.

All four of the independent International Federations offered online education resources to athletes. One elaborated on their provision suggesting that they also provided support to ASP because they can have an impact on athletes worldwide. The interventions were readily available on the organization's websites, however, one organization required individuals to register for the service. Only one organization reported the training as mandatory, suggesting that currently, age group athletes must complete the course prior to competing, and in the future, the course will be mandatory for all athletes.

Further information relating to methods of delivery and content was accessible for three of the four organizations. These organizations used various means to disseminate information, with the main sources being questions and answers (n=3), multi-media information (n=2), videos (n=2), and links to other resources (n=2). With regards to content, all three organizations reported information relating to the doping control process, the prohibited list, and TUEs. Other topics were noted, but consistency across the organizations was limited.

Details of what the four organizations specifically aim to achieve by providing anti-doping education differed. However, developing athletes' and ASPs' understanding of the rules surrounding anti-doping policy appeared to overarch the specific aims. All four organizations provided content in English and, two of these provided translated versions in languages relevant to their stakeholders.

In addition to the four independent International Federations, two NGBs and one European Governing Body provided their own anti-doping e-Learning platforms. Two provided free advisory training to athletes and/or ASP, while the other offered a fee-paying course for athletes and ASP. Information was disseminated on the fee-paying

course, using multi-media information, videos, and questions and answers. Other than the doping control process, content provided by these three organizations differed. To elaborate, one organization focused predominantly on more general information (e.g., getting it right) and the remaining two identified topics relating to specific anti-doping policy (e.g., ADRVs).

These courses aimed to educate athletes and ASP on the importance of anti-doping information. The geographical location of these organizations directed the languages used to disseminate the information. Two e-Learning platforms were provided in English, while the continental level of provision provided by the third organization meant that the resource was available in 25 languages.

Table 4. Additional Online Anti-Doping Education Resources

Organization	Name of education tool	Target audience	When is it delivered? Mandatory?	How is the information disseminated?	Content	Aim	Language	Link
<b>Federation Internationale De L'automobile</b>	Race True	Athletes	-Page accessible at any time by anyone through following link -Key facts can be downloaded by anyone -E-learning campus access requires registering	-Multi-media information -Videos -Questions & Answers	-General information -Prohibited substances & methods -TUEs -Supplements -Doping control -Results management -Registered testing pool	To inform and unite both athletes and their entourage about anti-doping.	English French German Italian Spanish Portuguese Russian Arabic Japanese Chinese	<a href="https://www.fia.com/education">https://www.fia.com/education</a>
<b>European Athletics</b>	I Run Clean	-Athletes -Anyone who is interested is welcome to complete the program	-Mandatory qualification for European Athletics' age group championships. -By 2020 mandatory for all athletes	-Multi-media information -Videos -Interactive activities -Questions & Answers -30-40 minutes to complete whole program -Each module contains links to expert-curated knowledge base to provide further info	-Eight modules --Decision making -Doping control -Breaking the rules -Prohibited list -Whereabouts -Consequences for health -Dietary supplement -TUEs	-To give more substance to the pledge- "I run clean" and to supplement and support anti-doping education programs offered by federations, national anti-doping agencies and other organizations -Provide platform's users with reliable	Bulgarian Czech Dutch English Estonian French Finnish Croatian Italian Georgian Greek Hebrew Hungarian Lithuanian Latvian Polish Romanian	<a href="https://www.irunclclean.org/">https://www.irunclclean.org/</a>



						information to help users understand the issues and regulations around doping -Help athletes understand their personal values, how they relate to sport and how they contribute to good decision making	Russian Slovak Albanian Serbian Swedish Spanish Turkish Ukrainian	
<b>International Climbing and Mountaineering Federation</b>	Anti-doping online education for Ice Climbers and sky runners	Athletes	-Online access available all year round, not mandatory.	-Written text -Images -Relevant links -Questions and Answers	-The code and its application -Roles and responsibilities -What is doping? -Prohibited list -TUEs -Testing, sample collection, and sample analysis -Consequences of ADRVs	To help UIAA athletes to understand the Anti-Doping rules.	English	<a href="http://uiaa.smas.org/login/index.php">http://uiaa.smas.org/login/index.php</a>
<b>Athletics Integrity Unit</b>	Knowledge Centre	Athletes, coaches, officials, event organisers and administrators.				To support athletes in understanding their responsibility to know and understand the rules, whether they are to do with anti-doping, transfers of		<a href="https://www.athleticsintegrity.org/knowledge-centre">https://www.athleticsintegrity.org/knowledge-centre</a>

						allegiance, or simply the competition rules of the sport. In addition, to support coaches, officials, event organisers and administrators in understanding how their roles have an impact in ensuring a level playing field for all athletes worldwide.		
<b>British Groom Association</b>	Groom Clean	Groom, rider, trainer, student, owner or parent	-age accessible by anyone at any time -Non-members can access course for £14.50 -For BGA members it is free, but registration is £21.50	-Multi-media information -Videos -Questions & Answers	-General information -Equine doping -Getting it right -Detection -Testing	To understand the importance of anti-doping and controlled medication in equestrian sports.	English	<a href="https://britishgrooms.org.uk/bga-e-learning/groom-clean">https://britishgrooms.org.uk/bga-e-learning/groom-clean</a>
<b>GAA</b>	GAA Senior Inter-County Player Anti-Doping 2017	Athletes	Details not disclosed	Details not disclosed	-ADRVs -Supplement usage -Medications -TUEs -Testing procedures	As part of its commitment to educating players, medics and team support personnel, the Medical, Scientific and Welfare	English	<a href="https://learning.gaa.ie/Antidoping">https://learning.gaa.ie/Antidoping</a>

						Committee has developed GAA specific e-Learning programs which aims to educate participants on anti-doping.		
<b>European Athletics Association (EA)</b>	I Run Clean	Athletes of all ages and levels in the 51 countries served by EA Anyone who is interested is welcome to complete the program	<ul style="list-style-type: none"> <li>-(Since 2018) mandatory for all participants in European Athletics' championship events</li> <li>-After completing all modules, you receive certificate with unique certification number – this is required to compete in EA events</li> </ul>	<ul style="list-style-type: none"> <li>-Self-explanatory video &amp; text</li> <li>-Questions to confirm understanding</li> <li>-30-40 minutes to complete whole program</li> <li>-Each module contains links to expert-curated knowledge base to provide further info</li> </ul>	<ul style="list-style-type: none"> <li>Eight modules:</li> <li>-Making good decisions</li> <li>-The WADA prohibited list</li> <li>-Health consequences of doping</li> <li>-Doping control procedures</li> <li>-Anti-doping rule violations</li> <li>-The 'Whereabouts' procedures</li> <li>-Therapeutic Use Exemptions</li> <li>-Dietary Supplements</li> </ul>	<ul style="list-style-type: none"> <li>-Provide platform's users with reliable information to help users understand the issues and regulations around doping</li> <li>-Help athletes understand their personal values, how they relate to sport and how they contribute to good decision making</li> <li>-Meant to supplement and support broader anti-doping programs</li> </ul>	25 languages	<a href="https://www.irunclean.org/">https://www.irunclean.org/</a>

## Summary of findings

WADA provides a number of specific and generic online anti-doping education resources to a global audience. Specifically, eight programs are available for athletes and athlete support personnel (e.g., coaches). However, tailored online (e.g., sport-specific, context-specific) education remains limited. To elaborate, 11% of NADOs (16/141) and 17% of IFs (6/34), and seven international and national independent sporting organizations were found to include online education within their anti-doping provision.

Despite a small number of resources in existence, it was noted that the majority of these resources are easily accessible and free of charge. The majority of interventions (91%, 51/56) could be accessed via the organizations' website and did not require any form of membership or affiliation. Many organizations used more than one activity (e.g., multi-media information and videos) to disseminate information to stakeholders. Although consistency was evident across the activities used, the content provided by organizations varied. For instance, some organizations appeared to focus on topics such as the prohibited list, testing procedures, and TUEs; while others reported the principles and values associated with clean sport and the consequences of doping. Interestingly, limited information was provided on topics such as strict liability and speaking up to share concerns about doping. Despite differences in content and topics, most organizations reported that their online anti-doping education aimed to develop awareness and knowledge around policy and practices. However, a consistent approach was not identified (e.g., length of program) and, the online audit revealed no information relating to the evaluation of these resources.

## Conclusion

The establishment of the World Anti-Doping Agency (WADA) International Standards for Education (2021) means that from January 2021 there will be a mandatory International Standard which will support signatories in the planning, delivery, and evaluation of effective education programs. It is envisaged that this guide will go some way to reducing the heterogeneity that is currently present across sporting organizations' online anti-doping provision. Although online education resources are readily available, the effectiveness of these resources in achieving the aims identified by organizations remains unknown. In order to maximize the effectiveness of online anti-doping programs as a means for enhancing knowledge and awareness, organizations,

policymakers, and academics must begin to explore possible answers to this question. Specifically, what impact does online education have on stakeholders' knowledge and does this form of education support the preservation of the spirit of sport and help foster a clean sport environment? Answering these questions presents an opportunity to create evidence-based online anti-doping education resources and, make sure that an athlete's first experience with anti-doping is through education rather than doping control. This approach will be essential for enhancing the effectiveness of online education, and global engagement with these resources.

## **Phase 2 – University Programs Audit**

### **Research Design**

Existing university level anti-doping resources (student-focused) worldwide were identified and reviewed. Two search strategies were used to gather relevant literature. First, the searches were conducted on Google (all dates) in April 2019. Anti-doping related terms (e.g., anti-doping, doping, and clean sport) were identified from the current literature and accompanied by terms used to describe environments where student-focused teaching may take place (University, College, or Higher Education). The Boolean operator 'AND' was used to separate anti-doping terms and environments to reach a wider range of sources, for example, 'Anti-doping AND University'. Second, the research team reviewed the courses found during the electronic database searches and used their existing knowledge and networks to identify any further resources. Each of the resources identified was recorded in a Microsoft Excel spreadsheet, which included information relating to (a) what resources exist, (b) target audience (e.g., specific subjects, levels), and (c) content covered.

### **Overview**

Fourteen university websites were accessed, and a total of 17 student-focused resources were found. In addition, two further globally available resources were identified and reviewed (i.e., SportsOracle and the WADA Anti-Doping Textbook). The 19 resources differed in the level of provision provided by the organizations (see Table 5), predominantly the resources were available to students enrolled on a pre-organised course (i.e., course, n=7 or lesson n=3; 53%), or a full-time course available to prospective students (n=8, 42%). The remaining resource was the University Textbook, which provided a comprehensive overview of doping in sport and related issues.

The majority of resources were aimed at students who wished to specialise in areas such as sport (n=9), law (n=4), or medicine (n=3). Courses appeared to be predominantly available to post-graduate students (n=5), whereas, modules (n=5) and lessons (n=3) were used more frequently in under-graduate provision of anti-doping education. Most of the courses were available to students enrolled on courses within Europe (n=14, 74%), with only two resources available beyond this. Of the remaining three courses, two courses were developed and conducted from universities across North America, and one course was from an institution in Asia.

### **What delivery methods were used?**

Eighteen of the organizations reported the way in which information was disseminated. Twelve (80%) resources were delivered to students face-to-face, using seminars (n=7), lectures (n=11) and workshops (n=3). Beyond this, six organizations delivered course content using online methods such as online lectures (n=5), self-instructed learning (e.g., directed readings, n=4), discussion forums (n=3), and downloadable/printable materials (n=1).

### **What content is provided?**

The content of the resources was often framed by the specialism of the course (i.e., sport, law, or medicine), and the level of qualification (i.e., undergraduate or postgraduate). Information relating to course content was provided across 17 resources, and the main topics identified were overarching policies and structure (e.g., the role of WADA, WADC; n=10), "what is doping?" (n=8), and the doping control process (n=5). However, three resources aimed at Law students, included topics relating to the legal implications of doping, and medical based courses provided information relating to pharmacology (e.g. the content and potential effects of substances).

### **What is the aim of the resource?**

Eight organizations (44%) aimed to provide students with a broad understanding of the contextual issues surrounding doping and anti-doping policies and practices. While, five organizations who aimed to provide education to law or medical students, reported that their resources aimed to enhance students' knowledge on topic specific information (e.g., physiotherapy practice). Beyond this, three organizations reported

that their resources aimed to train and equip students to work in the relevant field. One organization did not provide information relating to the aims of their provision.

### **Language**

All resources were available in English. In addition, two resources delivered face-to-face and online, were available in the respective countries' native language (Hindi Gujarati, and Serbian). One resource (the University Textbook) which can be downloaded or ordered in hardcopy via the host website was available in five different languages (i.e., English, French, Korean, Russian, and Spanish).

Table 5. University led student-focused anti-doping resources

Organization	Name of education tool	Target audience	Degree level, Year, Type, Mandatory	How is the information disseminated?	Content	Aim	Language	Link
<b>University of Colorado Boulder</b>	Philosophy and Sports	Philosophy students at the University of Colorado, Boulder	- Undergraduate - It can be applied to the philosophy minor and major. - Lessons in an elective module	-Seminar - Lectures	Doping: What is doping? Is it always wrong? What are the ethical concerns with anti-doping?	To examine conceptual issues in sport.	English	<a href="https://www.colorado.edu/philosophy/courses/undergraduate-courses">https://www.colorado.edu/philosophy/courses/undergraduate-courses</a>
<b>Durham University</b>	Course: Sport, Exercise, and physical activity: Module: Nutrition for Sport, Physical Activity and Health: Lesson: anti-doping policies and procedures (UKAD, WADA)	Sport, Exercise and Physical activity students at Durham University	- Undergraduate - 6 - Lesson in an elective module - No	- Lectures, - Laboratory practice - seminars	Anti-doping policies and procedures (UKAD, WADA)	To build upon students' underpinning knowledge of exercise physiology and psychology and critically apply this to the field of nutrition for special populations within sport, physical activity and health	English	<a href="https://www.dur.ac.uk/faculty.handbook/archive/module_description/?year=2017&amp;module_code=SPRT3211">https://www.dur.ac.uk/faculty.handbook/archive/module_description/?year=2017&amp;module_code=SPRT3211</a>
<b>Gujarat National Law University</b>	Diploma in Sports Law: Anti-doping and WADC	Individuals with undergraduate and postgraduate degrees, any professional is also eligible for	-N/A -N/A -Whole course -N/A	-Self-instructional material -Audio-video/Digital programs -Online	-What is Doping? -WADC -Purpose and scope of World Anti-Doping Agency -Responsibilities of Sportsperson	To understand vital rules and regulations of the sporting authorities of India and the world.	English Hindi Gujarati	<a href="http://www.gnlunonline.ac.in/course/view_details.php?id=18">http://www.gnlunonline.ac.in/course/view_details.php?id=18</a>



		applying to this course.		Support -Interactive Counselling -Online classroom sessions	-Identify the various violations under the World Anti-Doping Code -TUEs -ADRVs			
<b>Newcastle University</b>	Factors Affecting Elite Performance	Sport and exercise science students	-Undergraduate -6 -Modules -Yes	-Lectures, workshops, small group teaching.	-Anti-doping strategies in elite sport	The aim of this module is to provide students with a critical understanding and knowledge of contemporary issues and strategies in elite sport	English	<a href="https://www.ncl.ac.uk/undergraduate/modules/ES3002">https://www.ncl.ac.uk/undergraduate/modules/ES3002</a>
<b>Northumbria University</b>	Sports Law	Law students	-Undergraduate -6 -Lesson -No	-One lecture in a module	-Legal implications of doping in sport	To learn about practice in sports law in England and Wales	English	<a href="https://www.northumbria.ac.uk/study-at-northumbria/courses/m-law-exempting-ft-uufmay1/modules/lw6025-sports-law/">https://www.northumbria.ac.uk/study-at-northumbria/courses/m-law-exempting-ft-uufmay1/modules/lw6025-sports-law/</a>
<b>Sheffield Hallam</b>	International Sports Law in Practice	Individuals with a 2:2 degree or above in Law, Business, Sports Science or a related	-Postgraduate -N/A -Whole course -N/A	-Online distance learning online modules with live	-Business Consultancy Project -Commercial Regulation And Contractual Obligations In Sport	To offer expertise in the practice and procedure before the Court of Arbitration for Sport (CAS), FIFA's Dispute	English	<a href="https://www.shu.ac.uk/courses/law/llm-internatio">https://www.shu.ac.uk/courses/law/llm-internatio</a>

		degree		and synchronous taught delivery -recorded sessions -self-directed study and research -peer review & teamwork -coursework -viva examination	-International Sports Marketing And Sponsorship -Law, Regulation, Sport And Society -Anti-doping law	Resolution Chamber (DRC), UK Anti-Doping and other disciplinary courts and tribunals, with emphasis on the effective representation of the client in the resolution of complex sporting disputes		nal-sports-law-in-practice/distance-learning
<b>SportsOracle</b>	IOC Certificate in Drugs in Sport	Doctors, pharmacists, nurses, physiotherapists, Graduates of existing IOC physiotherapy or IOC sports medicine diploma, Major Games (including Olympic and Paralympic) Organising Committee medical and anti-doping workforce, including	-N/A -N/A -Whole course -Not mandatory	-24 lectures that can be downloaded or watched online over a period of six months -Students will also be directed to a selection of mandatory and recommended reading from various reference	-Introduction to the use and misuse of drugs in sport -WADA, the Code and International Standards -Sports pharmacology and clinical use of medications in athletes -Protecting the health of the athlete and maintaining clean sport -Healthcare providers at major sporting events -New medicines	To train and equip healthcare professionals and those working in the anti-doping field to advise and support athletes to make the best choices regarding effective clinical drug options while ensuring compliance with the rules of the World Anti-Doping Code (WADC), sports federations, and national anti-doping agencies.	English	<a href="https://sportsoracle.com/ioc-certificate-druginsport/">https://sportsoracle.com/ioc-certificate-druginsport/</a>

		volunteer and management staff, Healthcare professionals working with athletes and sport teams Anti-doping organizations' workforce		sources. -The official course reference text Drugs in Sport 7th edition (Routledge) will be provided to all students.	and medical technologies and future implications in sport			
<b>Stanford Medicine</b>	Health Pro Advantage: Anti-doping education for the health professional.	Physicians of all specialties, including Sports Medicine and Orthopaedics, as well as all other health and medical professionals that may interact with athletes	-N/A -N/A -Whole course -Not mandatory	-Interactive text, animations, videos, and case-based studies.	-Anti-Doping Roles and Responsibilities -The WADA Prohibited List -Therapeutic Use Exemptions (TUEs) -Dietary Supplements -The Sample Collection Process -Major Games Anti-Doping Specific Information	To provide current anti-doping specific information for physicians and other health and medical professionals.	English	<a href="https://med.stanford.edu/cme/courses/online/USADA.html">https://med.stanford.edu/cme/courses/online/USADA.html</a>
<b>University of Stirling</b>	Doping in Sport: Scandals and Policy Responses	Sport studies students at the University of Stirling.	-Undergraduate -6 -Elective module -Not mandatory	-lectures, seminars, tutorials and workshops	No information provided- course not currently running	Not disclosed	English	<a href="https://www.stir.ac.uk/courses/ug/sport/sports-studies/">https://www.stir.ac.uk/courses/ug/sport/sports-studies/</a>
<b>Swansea University</b>	Sport and Exercise science(undergraduate degree): The ethics of	Sport and exercise students registered on the undergraduate	-Undergraduate -5 -Elective module -Not mandatory	-Face-to-face taught lectures -Student discussions	-Why is doping prohibited? -The WADA and WADA Code -The legitimacy of the criteria for the	To critically explore the nature and variety of prohibited substances and methods	English	<a href="https://www.swansea.ac.uk/undergraduate/courses/engi">https://www.swansea.ac.uk/undergraduate/courses/engi</a>

	doping: health, sport and society	e degree at Swansea University			Prohibited List of banned products and substances -Doping as therapy or enhancement: the use and abuse of TUEs -Strict Liability -Whereabouts -Privacy -Athlete's Perceptions of doping & anti-doping -The Spirit of Sport	generically referred to as doping, situated in the global context of the World Anti-Doping Agency.		neering/b sc-sports-science-c600/
<b>Swansea University</b>	MAiSI: Anti-doping ethics, policy and practice	Individuals with a 1st or 2.1 degree in a relevant discipline.	-Postgraduate -7 -Full-time course -N/A	-Face-to-face taught lectures -Student discussions	Not disclosed	To equip students for high-level careers in sports administration and governance, with a focus on ethical sports, integrity and compliance.	English	<a href="https://www.swansea.ac.uk/postgraduate/taught/engineering/erasmus-mundus-ma-sports-ethics-integrity/">https://www.swansea.ac.uk/postgraduate/taught/engineering/erasmus-mundus-ma-sports-ethics-integrity/</a>
<b>University of Bath</b>	Sports Physiotherapy Certificate Module: The sports environment	Sports Physiotherapy Postgraduate students at Bath University	-Postgraduate -First year -Module -Mandatory	-Lectures and seminars	-Theoretical, ethical and practical elements surrounding fair play and anti-doping procedures. -The rights and responsibilities of various personnel.	To explore and manage the characteristics & challenges of physiotherapy practice in the sports environment, developing a multidisciplinary approach to	English	<a href="http://www.bath.ac.uk/catalogues/2018-2019/hl/HL50138.html">http://www.bath.ac.uk/catalogues/2018-2019/hl/HL50138.html</a>

						athlete management in different sporting contexts, for athletes of all ages and abilities.		
<b>University College London</b>	Sports Medicine, Exercise and Health MSc, Module: Team & Event Medicine	Sports Medicine, Exercise and Health MSc students at UCL	-Postgraduate -7 -Elective module -Not mandatory	Not disclosed	Not disclosed	To equip students with the skills to work in a sports team and event environment.	English	<a href="https://www.ucl.ac.uk/surgery/sports-medicine-exercise-and-health-msc-module-descriptions">https://www.ucl.ac.uk/surgery/sports-medicine-exercise-and-health-msc-module-descriptions</a>
<b>University of Copenhagen</b>	Anti-doping and Human Exercise Performance	PhD Students	-Postgraduate -N/A -Course delivered November 20-24, 2017 -Not mandatory	-Lectures -student led experiments, discussions and interaction	-Blood & plasma volume in relation to human exercise performance. -The Athletes Biological Passport and other strategies for detecting blood volume manipulations. -Grey-zone drugs including legal ergogenic aids, beta 2 agonists and pain-killers. -Testosterone & altitude training. -New possibilities	To expand participant's knowledge of anti-doping science	English	<a href="http://nexus.ku.dk/english/calendar/2017/phd-course-anti-doping/">http://nexus.ku.dk/english/calendar/2017/phd-course-anti-doping/</a>

					and challenges, including new pharmaceuticals & genetic manipulation			
<b>University of Lausanne's centre for Research and Expertise in anti-Doping sciences</b>	Certificate of advanced studies (CAS) - Anti-Doping for Sport	Professionals who wish to gain comprehensive knowledge and competence of the diverse aspects of doping and anti-doping in sport.	-Professional – N/A -Whole course -Not compulsory	-Face-to-face taught lectures. -Participants must complete either graded examinations, presentations or written paper for each module.	-General organization of anti-doping -Science and biology for anti-doping -Testing and investigations -Legal framework for anti-doping	The aim of the course is to give the opportunity to the participants to understand how sports organizations do tackle the current challenges of doping and of the fight against doping.	English	<a href="https://www.unil.ch/ssp/cas/anti-doping">https://www.unil.ch/ssp/cas/anti-doping</a>
<b>University of Lausanne's centre for Research and Expertise in anti-Doping sciences</b>	Doping : Sports, Organizations and Sciences	Anyone	-None -N/A -Whole course -Not mandatory	-Videos -Readings -Discussion forums	-What is doping? -Why do athletes give in to doping? -Organizations and doping: Prevention and repression -Bioanalytical and forensic approaches to doping	To encourage a critical understanding of doping.	English	<a href="https://www.coursera.org/learn/doping">https://www.coursera.org/learn/doping</a>
<b>University of NIS</b>	Doping and anti-doping in sport	Basic Academic Studies, Physical Education and Sport Students	-Undergraduate -4 -Elective Module -Not mandatory	-Lectures -Group tutorials	-The history of the use of doping. -Physiological & biochemical basis for the use of doping in sport.	To introduce students to all aspects of doping in sport, as well as methods for preventing and	English Serbian	<a href="http://www.fsfv.ni.ac.rs/pr euzymanje /send/89-first-year/795-">www.fsfv.ni.ac.rs/pr euzymanje /send/89-first-year/795-</a>

		at University of NIS			-WADA and the WADC -Ethical standards in conflict prevention. -Doping control process. -Obligations of athletes and coaches. -TUEs -Nutrition and supplementation.	combating doping		doping-and-antidoping-in-sport
<b>University of Sussex</b>	Sports Law	Sport Law undergraduate students at University of Sussex	-Undergraduate -6 -Elective Module -Not mandatory	-Lectures and seminars	-A part dedicated to international and comparative aspects of anti-doping regulations	The module will cover the subject of sports law with reference to national, regional and international regulatory systems	English	<a href="http://www.sussex.ac.uk/modules/2018/M3029-sports-law">http://www.sussex.ac.uk/modules/2018/M3029-sports-law</a>
<b>WADA, FISU, and the 2015 Gwangju Summer Universiade Organising Committee</b>	The Anti-Doping Textbook	University students who will one day be involved in sport in many different capacities and disciplines	-Any -Any -Whole course -Not mandatory	-Written information- Online -Hardcopy can be requested	-What is doping? -The fight against doping in sport -Science & Medicine -Consequences of Doping -Vulnerability and signs and symptoms	To provide a comprehensive overview of doping in sport and issues related to this.	English/ French/ Korean/ Russian/ /Spanish	<a href="http://www.antidopinglearn.github.org/">http://www.antidopinglearn.github.org/</a>

## Conclusion

Research has recognised the need to educate university students on anti-doping policy and practices (Erickson, McKenna, & Backhouse, 2015). However, an online review of university-led student-focused anti-doping education calls into question the global availability of such educational resources to undergraduate and postgraduate university students. To create change, we propose that international and national sporting and anti-doping organizations must work in collaboration with researchers and policymakers to influence the relevant decision-makers within universities and wider organizations whose professional standards drive university provision.

Given the broad identification of subjects which expose students to anti-doping policy and practices, a homogenous approach to university-led program is not sufficient. In order to maximize the opportunities to embed anti-doping education into university curriculum, a useful next step in this research would be to explore the role of anti-doping in the potential career paths of various subject areas. Only then will opportunities arise to enhance the provision of university-led student-focused anti-doping. And, in turn, will support WADAs mission to lead a collaborative worldwide movement for doping-free sport by providing current and future athletes and ASP with evidence-based anti-doping education.





**Work**

**Packages 2-4:**

*RE>ACT Delivery &  
Evaluation*

**Objective: determine the long-term influence of participating in RE>ACT and account for actual behavior change.**

In an attempt to determine the long-term influence of participating in the RE>ACT program, we returned to our original sample of RE>ACT participants (n=302; we did not return to the Control Group) and invited them to complete a further time point 4 survey. This survey included an opportunity for individuals to self-report experiences of witnessing problem behaviors post-intervention and how they responded to them (if applicable), which was the main purpose of this additional data collection point (to measure behavior change).

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### DATA COLLECTION

A time point 4 survey was not part of the original RE>ACT program design; thus, we were conscious that participation might be limited given the additional data collection request and the time that had lapsed since participants originally engaged with the project. We were also conscious that some of our original participants had likely graduated since participating in RE>ACT and therefore their email addresses would potentially be inactive. It was also anticipated that some of the gatekeepers would have moved on to new roles since supporting the project. We therefore sought to increase engagement with the additional survey by offering a prize drawing within each country.

The original RE>ACT evaluation tool was utilized with the addition of questions seeking to measure actual behavior change (see Appendix B). The survey was hosted on Qualtrics and participants were presented with Information on the project and provided Informed Consent prior to participating in the final round of data collection.

Each original university gatekeeper was contacted and provided with (i) information about the additional data collection point (see Appendix C) and (ii) a list of the original participants from their university who participated in the RE>ACT arm of the project only and asked to invite participants to engage with one further data collection point.

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### SAMPLE

Of the original 302 student-athletes who participated in RE>ACT, a total of 20 (4%) time point 4 measure were received, as illustrated by Figure 2.

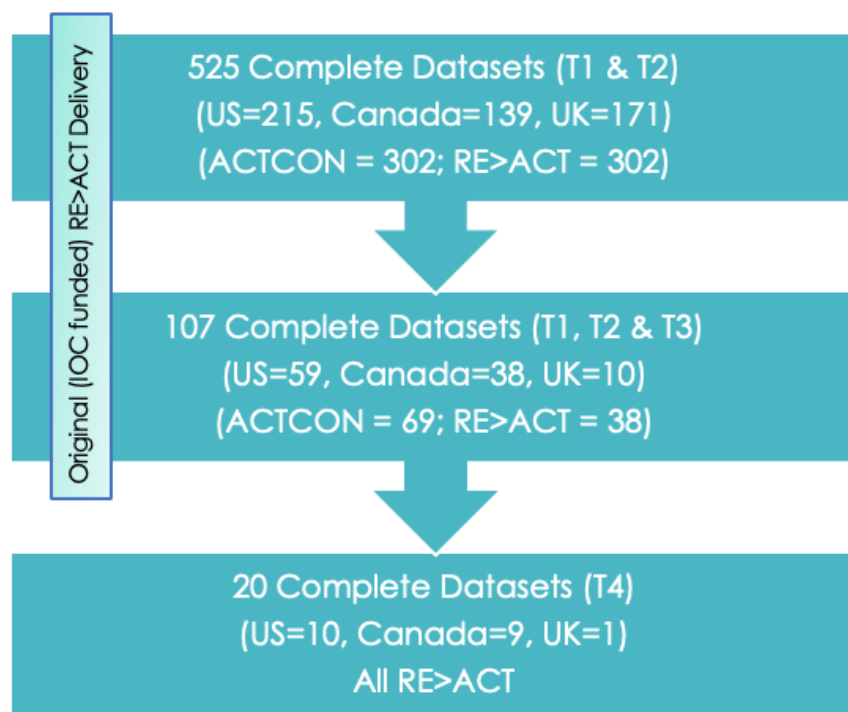


Figure 2. Time Point 4 Participants.

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## RESULTS

For the purposes of this report the data (n=20) will be treated as one dataset rather than being split across the three countries.

### *Dietary Supplements*

Figure 3 shows that the majority (n=16; 80%) of student-athletes had not witnessed a student-athlete using a dietary supplement that had not been certified by a third party agency in the past three months. Of those who had (n=4; 20%), two participants (10%) had witnessed it 2-3 times, one (5%) had witnessed it once and one (5%) had witnessed it 4-5 times.

When considering the most recent time they (n=4) had witnessed the behavior, three participants (75%) reported that they did nothing in response, while one (25%) reported that they confronted the individual. In describing the circumstances that prompted them to respond in a particular way, reasons for 'do nothing' included: "don't know

them well enough", "I am now out of the program/team, therefore it wasn't my place to tell someone on the team what to do", and "not affecting anyone but themselves". Meanwhile, the individual who confronted the behavior reported that "it was a friend, and not a seriously dangerous supplement".

Participants (n=4) were then asked to describe the outcome of the situation, to which those who reported 'do nothing' (n=3; 75%) said: "n/a", "nothing happened" and "nothing happened". For the one (25%) who confronted the individual, they said "the person acknowledged my concern, but continued to use the supplement".

In the past three months, how frequently have you witnessed a student-athlete using a dietary supplement that has not been certified by a third party agency (e.g., Informed Sport)?

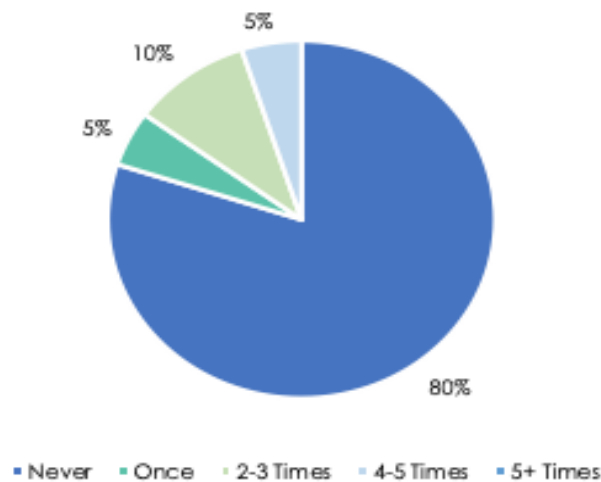


Figure 3. Percentage of student-athletes who witnessed dietary supplement use.

### Prescription Medications

Most participants (n=18; 90%) had not witnessed a student-athlete using a prescription medication without a personal prescription in the past three months, as shown by Figure 4. Two participants (10%) had witnessed the behavior, with one (5%) witnessing it once and the other (5%) reporting to have witnessed it 5+ times.

Considering the two participants (10%) who reported witnessing the behavior, one (5%) confronted the individual and the other (5%) opted to do nothing. The participant who confronted the individual reported that the circumstances prompting this reaction included "friend who was attempting to self medicate a mental health issue". As an outcome, the "person agreed to...talk to a counselor".

In the past three months, how frequently have you witnessed a student-athlete using a prescription medication (e.g., Adderall) without a personal prescription?

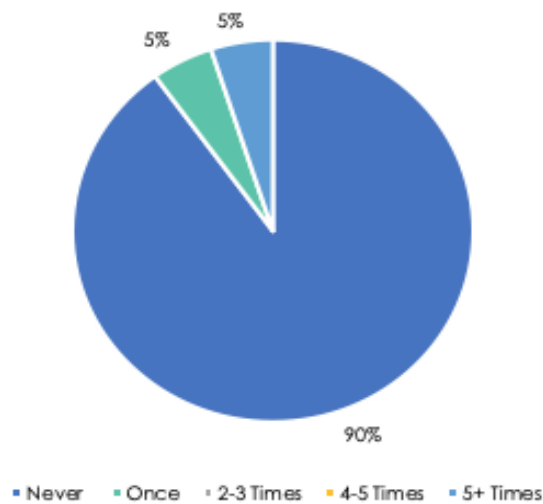


Figure 4. Percentage of student-athletes who witnessed prescription medication use.

#### APEDs

No participants (n=20; 100%) reported that they had witnessed a student-athlete using APEDs in the past three months.

#### Recreational Drugs

Recreational drugs were the most commonly witnessed substance in the past three months, as illustrated by Figure 5. Still, most participants (n=9; 45%) had not witnessed the behavior. Meanwhile, five (25%) reported witnessing the behavior 5+ times, three (15%) had seen it once, two (10%) 2-3 times, and one (5%) 4-5 times.

Of those who had witnessed the behavior at least once in the past three months (n=11; 55%), ten (91%) reported that they did nothing in response while one (9%) confronted the individual.

When discussing the circumstances that prompted their particular response three (30%) of those who reported doing nothing did not provide information. Among the remaining seven (70%), the legality of cannabis was referenced: "it is legalized now – there are worse things", "it was legal in the state...and is seen as a regular occurrence". Also, the (perceived) lack of health consequences: "it's not harmful to their health (cannabis)". The relationship with the individual was also mentioned by two

participants, "I didn't know them" and "teammate - didn't want them to be mad". A further individual acknowledged that the group using the drug already knew the risks, "it was a group of people who already knew the consequences of using the drug, so I didn't feel it was necessary to intervene". Finally, one individual referenced the context, "it was a party". In contrast, for the one participant who did confront the individual, they stated that the circumstances leading to the confrontation were, "tell them they could lose their scholarship".

When reporting the outcome of witnessing recreational drug use, the participant who confronted the individual said, "they said they won't catch me". Additionally, the individual who did nothing because "it was a party" said "I didn't know them well enough", acknowledging an element of relational concern. For the remaining participants who did nothing, they stated: "n/a", "no comments made about sports", "no outcome", "no outcome. Everyone continued as normal", "the person continued to use the substance" and "N/A".

In the past three months, how frequently have you witnessed a student-athlete using recreational drugs (e.g., Cannabis)?

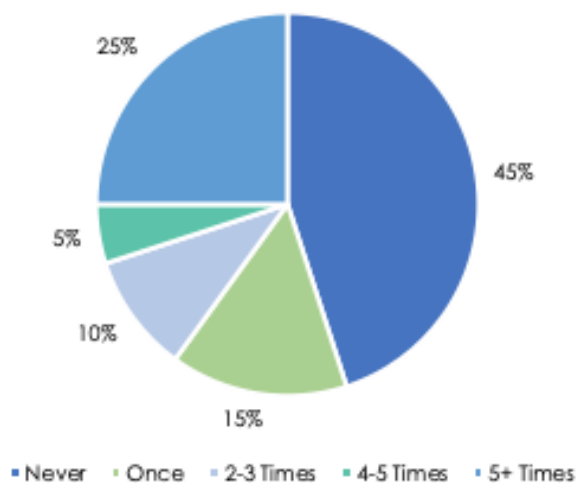


Figure 5. Percentage of student-athletes who witnessed recreational drug use.

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## CONCLUSION

The majority of participants had not witnessed any of the four specific substance use categories considered in the past three months. It is encouraging that such behavior does not appear to be a common occurrence on university campuses. Yet, all but

APEDs were witnessed by multiple individuals. It is therefore critical that student-athletes are equipped and empowered to address such situations. Based on the small data sample included here, it seems recreational drug use is the most commonly witnessed substance use situation and the majority of student-athletes do not consider it intervention-worthy. It is therefore critical that student-athletes be reminded that despite legal and national changes related to various recreational drugs, sporting rules prevail in the sport context (e.g., cannabis is still banned in sport despite being legalized for recreational use in many States and in Canada). It appears that anti-doping efforts at the university level should focus on educating student-athletes on the breadth of the Prohibited List and afford particular attention towards recreational drugs, medications and supplements. The fact that most participants reported doing nothing in response to each of the substance use scenarios suggests that continued conversation and education on these issues would be beneficial in order to create true behavior change.



**Objective: Evaluate the effectiveness and feasibility of the refined RE>ACT program.**

### PARTICIPANTS

#### *Student-Athletes*

Student-athletes are an important group to target given they are at elevated risk for banned substance use (Buckman, Farris, & Yusko, 2013) yet, they have indicated a hesitation towards reporting doping (see Erickson, Backhouse, & Carless, 2017). The 2017 World University Games implemented the most ambitious anti-doping program to date (FISU, 2017), signalling the reality that student-athletes have as much, if not more, to gain from using banned substances than other populations given they are often trying to secure professional contracts (Weaving & Teetzel, 2014). Indeed, they generally represent the next generation of elite athletes, as demonstrated by the fact that Rio 2016 Games participants included 1,018 incoming, current, or former National Collegiate Athletic Association (NCAA) student-athletes representing 107 different countries (Martinez, 2016) and the 2018 Winter Olympics included 161 representing 20 countries (NCAA, 2018). Moreover, student-athletes may go on to become the next generation of ASP (e.g., coaches, sport scientists). Collectively, student-athletes are primed to transfer the skills they learn and implement them in sporting contexts more broadly.

Consistent with the feasibility phase of RE>ACT, US, UK and Canadian universities were targeted because they: (a) are united in language, but culturally unique (e.g., ethnic/economical background, university sport structure, sport professionalization), (b) represent the nations with the most established university sport structures and (c) enforce anti-doping rules. Critically, US university sport (NCAA) is *not* WADA-compliant whereas, USport (Canadian university sport) and British Universities and Colleges Sport (BUCS) are WADA-compliant. This important distinction has therefore been accounted for in our project. The benefit of including the NCAA is that it provides insight into a well-established sub-elite sporting system and may open the door to future consideration for WADA-compliance within the organization.

### *Athlete Support Personnel (ASP)*

Consistent with the NCAA (2017) recommendations for best practice in drug and alcohol education, this WP targeted university ASP (e.g., coaches, athletic trainers). Student-athletes have suggested that the long-term benefits of RE>ACT could be enhanced by ASP being familiar with (and reinforcing) the core RE>ACT content (e.g., bystander effect, skills, knowledge). Therefore, in combination with WP 3, this WP has the potential to establish a community-based approach to prevention by: (1) equipping athletes and ASP to take personal responsibility and address doping behaviors in sport and (2) establishing critical channels of communication between athletes and ASP regarding doping-related issues. The latter is particularly pertinent given coaches have previously indicated uncertainty regarding how to broach the issue of doping with their athletes (Patterson, 2014).

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## PROGRAM DESIGN

The content for the RE>ACT program is based on several complementary theoretical frameworks (see Appendix D) and formative research with student-athletes (Erickson, Backhouse, & Carless, 2017). Drawing on established definitions, RE>ACT is intended to ultimately influence or change individuals' social, environmental, and organizational conditions as well as their choices, attitudes, beliefs, and behaviors. Informed by a process evaluation of the delivery of RE>ACT to student-athletes, the program currently consists of one 120-minute session (see Appendix E).

### *ASP Session*

For delivery of RE>ACT to ASP, the RE>ACT content was adapted to the perspective of athlete support personnel (ASP) (rather than student-athletes). To achieve this, we strategically changed the language used throughout the program so that it challenged ASP to consider (a) their current understanding of specific topics and (b) how *they* would respond to specific substance use situations (as opposed to how they thought *student-athletes* would respond). The logic model of this program is shown in Appendix F.

The underpinning RE>ACT Model (Figure 6) and session content remained consistent across delivery to student-athletes and ASP.

# RE>ACT Model

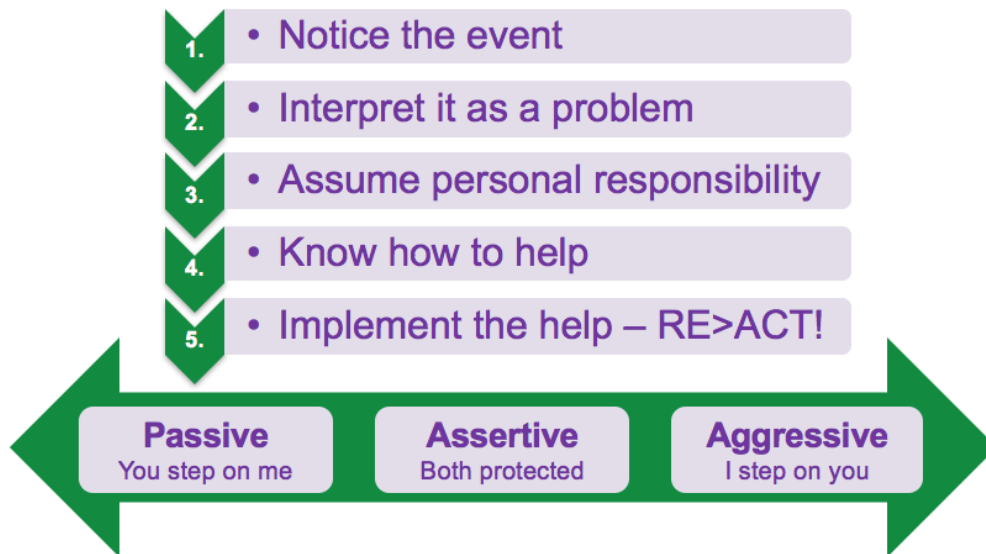


Figure 6: RE>ACT Model

## Desired Outcomes

- Determine the opportunities that student-athletes (WP3) and ASP (WP 4) perceive to be intervention-worthy.
- If noticeable gaps are identified in perceived opportunities to intervene, increase appreciation for intervention-worthy doping-related situations.
- After increasing awareness, change perceptions of personal roles and responsibilities for intervening in these situations.
- Provide individuals with the skills, confidence and resources necessary to effectively intervene and encourage intervention among their peers.

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## PRIMARY OUTCOME MEASURES

Recognizing the urgent need for the robust evaluation of anti-doping interventions (Elbe & Brand, 2016), and informed by our initial delivery of RE>ACT, participants completed an adapted version of the original RE>ACT evaluation tool. Two versions of the RE>ACT evaluation tool were created for this program of research – one for student-athletes (see Appendix G) and one for ASP (see Appendix H) - so that each population would be able to answer the questions from their own personal perspective.

It was originally planned for the baseline measure to be completed three months before intervention delivery (T1); however, due to the limited time frame for project completion (12 months), it was agreed that the baseline measure should be completed 2 months before engaging with RE>ACT. Accordingly, the adapted RE>ACT evaluation tool was completed two-months before the intervention (T1), immediately prior to the intervention session (T2), immediately following the intervention session (T3), three-months post-intervention (T4) and 12-months post-intervention (T5) by each respective group (student-athletes & ASP). Analysis between T1 and T2 acted as a 'control' period (demonstrating that receiving no intervention led to no changes in the factors featuring in the evaluation tool) and analysis between T3 to T4 illustrated any changes that occurred and remained due to the RE>ACT intervention. *The control period and post-intervention period were matched at two months to account for the same time period.*

The evaluation tools completed at T1-3 were administered in person by a member of the research team in order to personally introduce the project and increase engagement with the evaluation survey. Meanwhile, the T4 and T5 surveys were offered online so that participants could complete them at their own convenience. In an attempt to document behavior change stemming from the RE>ACT program, the evaluations completed at T4 and T5 included an opportunity for participants to self-report whether or not they had the opportunity to confront a problem situation (e.g., drugs, alcohol, bullying) since participating in the intervention. If 'yes', they were invited to share a description of the event and respond to tailored questions exploring such things as perceived (i) skills and (ii) confidence to confront. In an effort to increase engagement with these important time point measures, we offered participants an opportunity to enter a prize drawing upon completion of both the T4 and T5 measures.

### *Secondary Outcome Measures*

The secondary outcome measures were theoretical mediators (e.g., attitudes, beliefs).

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## RECRUITMENT AND DELIVERY

The process from point of contact with universities to actual delivery took various forms, depending on the needs (and structure) of the particular university. Generally speaking, initial contact was made by Dr Erickson via email, and contacts were provided with a description of the project for both (a) student-athletes and (b) athlete support personnel (see Appendix I and Appendix J). The preferred approach to delivery was to engage with universities that were able to provide access to both student-athletes and ASP, but that was not feasible for many of the universities given the timeframe. As a result, some universities participated only in the student-athlete delivery while others exclusively engaged with the ASP branch. After agreeing to participate, each university contact was asked to recruit participants. The contact was also asked to confirm an acceptable date, time, and location for the delivery of the session(s). Giving ownership of the schedule to university contacts was critical given the variability in student-athlete and ASP schedules (e.g., classes, practices, games, etc.).

The first baseline data was collected in Canada in November 2018 and was followed by baseline data collection in the US in January 2019. Session delivery commenced two months later in Canada in January 2019 with one university engaging with both the student-athlete and ASP program. Session delivery in the US followed, with three university engaging. One participated with student-athletes only, one with ASP only, and one university engaged with both populations (student-athletes & ASP). All data collection and program delivery in Canada and the US was overseen by Dr Erickson.

It was originally envisioned that data collection and delivery across the three countries would be done simultaneously; however, data collection in the UK proved particularly challenging. After months of reaching out to personal contacts, and given the tight timeframe that this project was operating within, it was determined that delivery to UK ASP would be abandoned. Accordingly, only UK student-athletes engaged with this project and the final round of data collection and delivery was completed in the UK in summer 2019. Data collection and program delivery was led by Dr Staff and Dr Patterson in the UK.

## SAMPLING

RE>ACT has been delivered within universities in the US (n=3; NCAA Division II=2, NCAA Division I=1), Canada (n=1) and the UK (n=1).

### Sample Demographics

For the purposes of the Interim Report, each Sample (ASP and Student-Athletes) is being treated as one sample rather than being split up by country. The Samples include *all participants that provided data at time point 1*. The Final Report will focus on those who provided data across all time points.

### ASP

The total sample (n=52) consisted of 34 males (65%) and 18 females (35%). Participants ranged from 22 – 62 years of age, with the most common age being 33 years of age (n=6; 12%) and all other ages representing less than 10% of the sample. Figure 7 demonstrates that ASP represented a range of roles within athletic support, with the most common being coach (n=26; 50%), followed by administrator (n=13; 25%) and athletic trainer (n=6; 12%). Considering years of experience in university sport, this ranged from zero to forty years, with two participants not providing a response. Of those who responded (n=50), the majority had 20+ years of experience (n=18; 36%), followed equally by 0-5 years (n=11; 22%) and 5-10 years (n=11; 22%) and then 11-20 years (n=10; 20%). Finally, ASP operated across multiple sports, including many individuals indicating that they did not work specifically with one sport but rather supported multiple or all sports within their university.

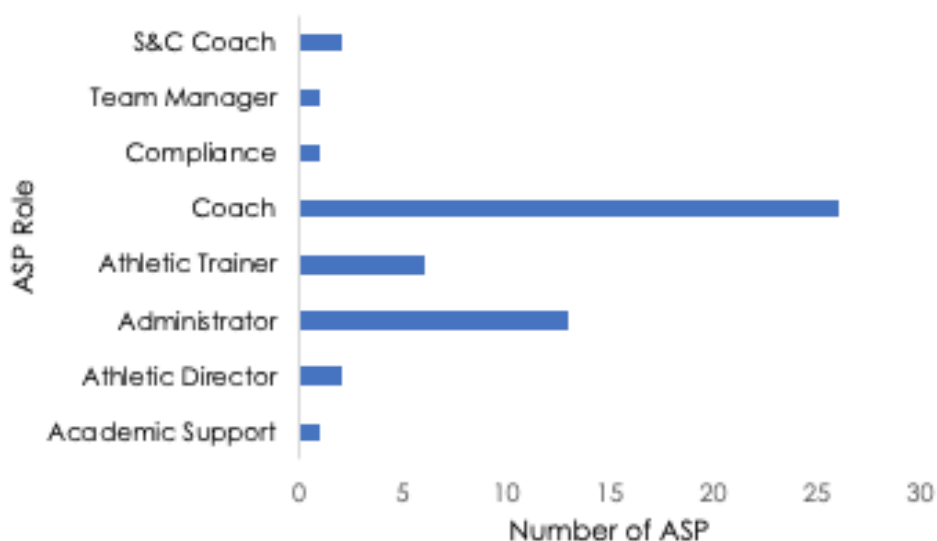


Figure 7. Roles of ASP at their university.

Considering years of experience in university sport, this ranged from zero to forty years, with two participants not providing a response. Of those who responded (n=50), the majority had 20+ years of experience (n=18; 36%), followed equally by 0-5 years (n=11; 22%) and 5-10 years (n=11; 22%) and then 11-20 years (n=10; 20%). Finally, ASP operated across multiple sports, including most ASP (n=23; 46%) indicating that they did not work specifically with one sport but rather supported multiple or all sports within their university (see Figure 8; two participants did not specify). Of those who were affiliated with specific sports, basketball was the most common (n=9; 18%), then football (n=5; 10%) and all others representing less than 10% of the sample.

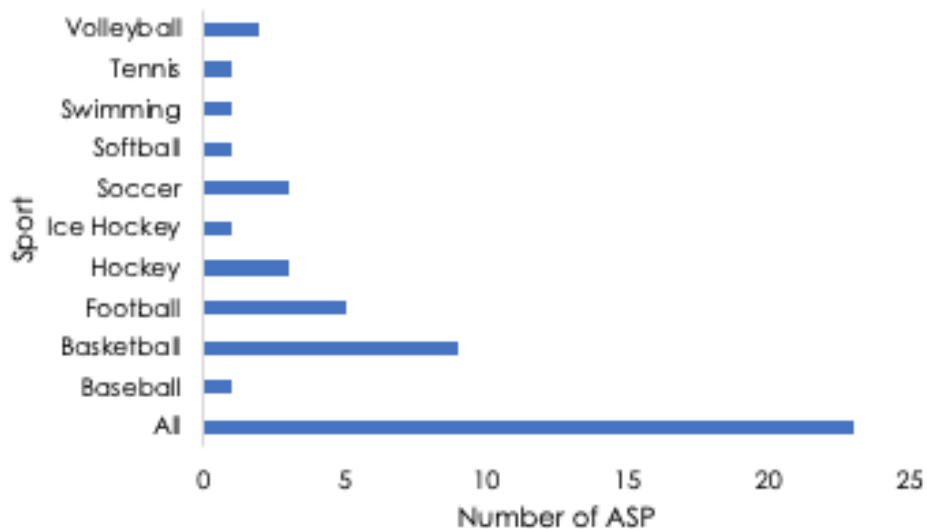


Figure 8: Sports represented by ASP.

### Student-Athletes

The total sample (n=204) consisted of 149 males (73%) and 55 females (27%). Student-athletes represented a range of sports (see Figure 9), with the majority participating in track and field (n=66; 32%), followed by football (n=58; 28%) and rugby (n=45; 22%) and the combination of cross-country & track and field (n=21; 10%), with all other sports representing less than 10% of the total population.

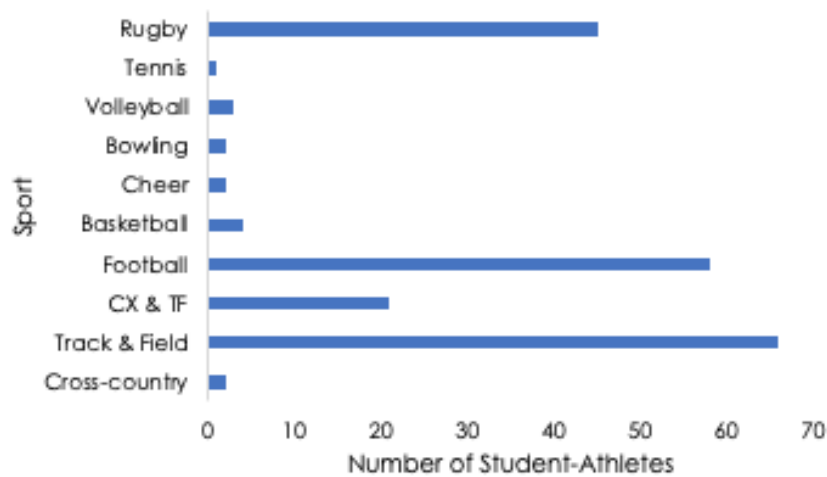


Figure 9. Sports represented by student-athletes.

Student-athletes represented all years of school, with first year (n=63; 31%), second year (n=56; 27%) and third year (n=54; 26%) being the most common. There were also student-athletes in fourth year (n=15; 7%), and equally in fifth year (n=8; 4%) and masters programs (n=8; 4%). Finally, student-athletes (n=199) had participated in their respective sport for a range of one to 20 years, with five student-athletes not providing this information. The majority (n=102; 51%) had been participating for 5-10 years, while 77 (39%) had been engaged for 10+ years and the rest (n=20; 10%) had less than five years of experience in their sport.

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## RESULTS

Results across the five time points will be presented for ASP and student-athletes in the Final Report.



**Work**  
**Package 5:**  
*Scoping Exercise*

### **Objective: To conduct a needs analysis for anti-doping education within universities**

#### **Context**

Alongside delivery of RE>ACT to student-athletes and ASP within the US, UK and Canadian universities, the research team sought insights from university personnel (i.e., academics, administrators) in relation to the feasibility (and perceived importance) of establishing anti-doping content for university students. The purpose of this process was to develop an understanding of how RE>ACT, and other programs devised by WADA (e.g., the Anti-Doping Textbook) could be implemented more widely across universities.

#### **Research design**

It was initially proposed that members of the research team would interview university staff while on university campuses delivering RE>ACT. However, during recruitment, it became clear that anti-doping education was not typically implemented by the student-athlete and ASP gatekeepers whom we contacted (i.e., team coaches, heads of sporting departments). These individuals appeared to have local control over anti-doping education for student-athletes, but were not involved in decision making with regards to the implementation of anti-doping education to broader student populations. Based on this discovery, the principal investigator (KE) engaged in discussions with WADA about alternative avenues of conducting a needs analysis and they agreed to a survey of their, and our, personal contacts believed to be actively involved in delivering anti-doping education at university level, or who had communicated their interest in doing so in the future.

A list of 20 organizations (n=16 universities and n=4 NADOs) was compiled and email addresses were supplied by WADA or located using online searches (e.g., Google, university website phonebook). Each contact was invited to participate in a survey via email. The email contained an information sheet, consent form and the survey (see Appendix K). The survey was divided into four sections. *Section 1* asked the respondent to specify their role, and the roles of any individuals who assisted them in completing the survey. *Section 2* focused on current university-based anti-doping education, beginning with a yes/no question regarding whether or not it is in place and seven

follow-up questions around the nature of the education if the answer was 'yes'. Similarly, *Section 3* explored future university-based anti-doping education opportunities, beginning with a yes/no question regarding if they have plans for their provision, with six follow-up questions around the nature of the education they are planning. In both sections (2 and 3), the follow-up questions related to reasons for implementation, who the target audience is, how much time is/can be devoted to it, methods used and topics included. In *Section 2*, additional questions were asked regarding evidence of effectiveness and response of individuals who have received it. In *Section 3*, the alternative question was around activities (e.g. question and answer) being proposed. The final section of the survey, *Section 4*, related to resource and sustainability, asking participants three questions around what resources are needed to enable anti-doping education to feature in the university curriculum and what are the main challenges in having anti-doping education feature at university level.

Only three (15%) individuals completed the survey and returned it to the research team. One individual (5%) replied to the invitation informing the research team that his institution was part of an accreditation scheme managed by the NADO, but was not able to provide further details of this himself. Four individuals (20%) responded via email to state that they were not personally involved in delivering anti-doping education at university level. Another three individuals (15%) replied to the email stating that they would be happy to complete the survey at a later stage, though none of them ever returned the document. Nine individuals (45%) did not respond to the invitation.

## Findings

### **What were the reasons for implementing anti-doping education in the university context?**

Across the three organizations, it was clear that each individual was a passionate supporter of anti-doping efforts and had consequently elected to integrate anti-doping information into their teaching. Two of the participants specifically stated that *“education is necessary to fight doping”* and acknowledged the importance of *“addressing the need for education beyond information-dissemination”*. With regards to the aim of their provision, similar to findings of the audit in WP1, they stated a desire to raise awareness, enhance knowledge and prepare their students for their working lives (in jobs that would likely face anti-doping-related matters). Specifically, one individual

reported the aim was to increase student understanding of the complexity of doping, including what it is, why regulations are in place and how it might impact their work. Another emphasized their desire to improve their students' knowledge to enhance their confidence in order to fulfil their roles in doping prevention.

### **Who was the target population?**

The three respondents came from a Sports Management and Sports Law context. However, the specific populations they reached differed. One respondent delivered anti-doping content to the undergraduate sport management degree, via a sport law module. They had previously delivered anti-doping content more broadly than this (i.e., in other modules or courses), but each of the other avenues of delivery were ceasing in 2020. The second respondent delivered a 'major course' on anti-doping to sports law students in their 5<sup>th</sup> year of study. The rationale for this was to ensure that students had a *"robust knowledge"* of sport law ahead of focussing on anti-doping law specifically. The last respondent delivered a certificate in doping prevention that could only be accessed by individuals who had already completed their degree in their chosen subject (therefore, making it a post-graduate qualification). This course was created specifically for ASP, with the respondent listing physicians, pharmacists, physiotherapists, coaches and sport scientists as potential attendees.

Thinking ahead, only one respondent suggested expanding delivery to other target populations and they named *"Allied Health Professionals"*. They stated that they might develop a post-graduate qualification in Sporting Integrity and include a module on anti-doping within it. Notably, this respondent commented that such a qualification would be introduced with the intention of exploring the details of regulations – whereas, they believed that anti-doping education being provided to undergraduate students (as it is currently) was important because it allowed them to *"draw their own ethical line"*; thus, the purpose of including anti-doping education with this group is more values-based.

### **How much time is, and can be, dedicated to anti-doping education in university contexts?**

For the respondent who had integrated anti-doping into the undergraduate sport management degree, they spent one week (out of a 12-week semester) on the

subject, which equated to approximately three hours. The major course for 5<sup>th</sup> year sports law students comprised 12 hours (with this respondent suggesting 10-15 hours could be spent on anti-doping). Lastly, the certificate in doping prevention lasted 5 days in total. Therefore, time dedicated to anti-doping is somewhat varied across stakeholders.

### **What methods of delivery are, and could, be used?**

All three respondents favored face-to-face delivery for anti-doping education. Within this, they used a combination of lecture-style delivery and interactive activities such as question and answer, case studies and videos. Though they complemented the face-to-face delivery with online content (specifically, signposting students towards a NADO online program), one individual explained why face-to-face education is necessary:

*Face-to-face is preferred, supported by the other methods. Undergraduate students tend not to read the materials provided, and struggle to understand them unless put into context with case studies currently in the media. Role plays and debates then are great to support the lecture which provides the basic framework. Students seem to have worked out how to 'game' the system with quizzes and online education and will, for example, fast forward lectures at maximum speed to avoid spending time listening/learning.*

Rather than complementing the face-to-face delivery with an online program, one individual stated that they provided some materials (e.g., doping control forms) in advance; this would most likely be done in order for students to analyze these and bring their thoughts to the session to facilitate greater depth of discussion. Another respondent commented that they provided handouts of the session materials during the session; this is likely so that the attendees could annotate them and refer back to them as a resource after the course. This same respondent specifically noted that they had attendees engage in group work during sessions. Notably, they had their session on ethics end with a “podium debate”. Both of these activities are likely to facilitate sharing/challenging of ideas, such as working through dilemmas and deciding on ‘best’ practice. Thus, meeting the goal of the provision, which is to increase knowledge, confidence and likelihood to act in doping prevention.

### **What topics are included?**

The certificate in doping prevention covered a substantial list of topics (13 in total). For the most part, these were aligned to topics listed in key global anti-doping documents (e.g., WADC and ISE), such as the history of doping, definition of doping/ADRVs, doping and ethics, doping control process, prohibited substances and their effects, consequences (e.g., sanctions and beyond), nutritional supplements and therapeutic use exemptions. Beyond this, they also covered epidemiological aspects of doping, psychological and sociological topics surrounding doping and detection methods and the work of accredited laboratories.

The other two respondents reported a much narrower focus to their content. The individual engaged with delivering to sports management students, within a sports law module, included content on ADRV and results management, which they stated was framed within a values, ethics and spirit of sport narrative. Indeed, they stated that they intentionally put anti-doping into a broader sports integrity context. Similarly, the individual delivering to 5<sup>th</sup> year sports law students covered sources of anti-doping law, ADRV and litigation, which they believed were *“basics for lawyers”*. Within this, they debated the definition of values, which they reported as *“difficult!”* Notably, one of these respondents explicitly mentioned the Anti-Doping Textbook when discussing their content. They said, *“The topics in the Anti-Doping textbook are appropriate”*.

Going forward, one individual commented that it would be helpful to provide *“suggested assessment/case studies/debates/role plays”*, especially for those working in the athlete support personnel space. Furthermore, they thought *“consideration for whether and how to incorporate a broader sports integrity context”* might also be beneficial.

### **Effectiveness**

All three respondents believed that their anti-doping content had been well-received by their students. One said, *“students reported really enjoying and benefitting from this”*. Similarly, another stated they had an *“excellent response from students, who feel like they are having a very specific course”*. The final respondent indicated that they actually have a formal evaluation in place to gauge how useful the attendees find the delivered content of the certificate in doping prevention for their day-to-day work (reported on a 5-point Likert-type scale) – which is *“always answered with 4 or 5”*. Furthermore, they commented that, *“talking to participants implies that they do use the*

content and are very thankful to receive such in-depth information as the online courses are, in their opinion, not as helpful".

None of the respondents capture information regarding how the students' engagement with the content may influence their actions/behaviors. However, in more 'tangible' terms, one of the respondents commented that they believe the content is effective because, "some of the graduates have been hired by ADOs". One of the respondents does assess students on the topic of anti-doping. They are given a scenario (e.g., an athlete has tested positive) and they are asked to provide advice to their client. The students' responses to the scenario enables the respondent to establish "how well they understood", commenting that "they struggle with complexity". This perhaps connects with an earlier comment from another respondent, who waits until the students' 5<sup>th</sup> year before engaging them with content related to anti-doping, claiming that they need to have had long enough to fully understand law before they can understand doping-related law.

An important unintended consequence to acknowledge is that one respondent reported their students discussing known doping in the sessions. While they signpost them towards reporting mechanisms, they are doubtful that students use these. Consequently, they suggest that university staff delivering content on anti-doping could be provided with guidance on how to address such situations. This signals an appetite for programs such as RE>ACT, which would meet this need.

## **Resources**

When asked about the resources that are necessary to implement anti-doping education in university contexts, one respondent emphasized that "expertise and money are key". Building on the concept of finance, the individual contributing to the certificate in doping prevention stated that they need a minimum number of attendees (12) in order for the course to "break even". They also commented on expertise, stating "It also needs the expertise within the specific topics. Some of them are covered by my and my professor's expertise, for the rest we pay external experts". From a more practical perspective, they also identified the need for "Rooms, equipment and hardware".

The final respondent also agreed that expertise is needed, commenting *“For lecturers who do not have a background in anti-doping, then teaching tools [as they had outlined in the future focus answers featured in previous sections] would be extremely useful”*. Beyond this, they took a slightly different angle to the issue of resource and specifically drew on the resource that they had used to inform their provision; they stated *“If the WADA Anti-Doping Textbook was an e-book with interactive sections and links this would be very useful”*. They also commented on buy-in as a resource, stating that *“An awareness for lecturers on “why” to include anti-doping as a Module/single session would also be useful for those new to the area”*; this is something that links to the findings that it appeared that the provision of anti-doping was often being driven by these specific individuals, not by a recognition of the institution (and higher powers) that anti-doping was important within their university's curriculum.

## **Conclusion**

Initial insights gained from University staff via this work package reveal varied practice in anti-doping education at the university level, including different target populations, topics covered and time dedicated to this area. Despite this variation, it is positive to see that some guidance appears to be taken from key documents, such as the WADC, to inform topics that should be covered and core values that should be communicated. Notably, there was agreement surrounding the delivery methods that are preferred (i.e., face-to-face, with supplementary materials online or in print). There was also consensus around the need for resource, specifically expertise and financial support, in order for the implementation of anti-doping education into university curriculum to be possible. In this vein, it is important to acknowledge that much of the activity being reported appeared to be driven by specific individuals with a passion for anti-doping, rather than a mandate from an individual high in the power structure of the institution. Consequently, it is possible that these activities might swiftly end if the individual were to leave their position. Establishing who, within each institution, would be responsible for agreeing to, and championing for, anti-doping education to feature in the curriculum is important if WADA hope to establish and sustain a provision in this context. Aligned with such investigation, there is a need to discuss how universities fit into the anti-doping governance structure (e.g., Can they be signatories? Would they enter into a Memorandum of Understanding with WADA or their NADO?) As a first step in this process of future research to establish the best ways to engage with universities, it would be prudent to learn more about existing university-related schemes, such as



UKAD's University Accreditation. Beyond this, there is a clear need for greater engagement with universities to establish their needs and wants for anti-doping education, as the current sample was limited to three individuals. The survey created within this work package is available (see Appendix K) for use to facilitate such consultations.

**Work**

**Package 6:**

*Development of  
University*

*Anti-Doping Course  
Content Outline*

### **Objective: To create a university based anti-doping course curriculum outline**

The original objective of this sixth and final work package was to use the data collected in the first five phases of this program of research to update the Anti-Doping Textbook (2017) and produce version 2.0. However, after reviewing the content of the Textbook, and considering the upcoming implementation of the International Standard for Education (ISE) and revised 2021 Code, it was agreed with WADA that producing a broader university anti-doping course curriculum outline would be more timely and useful. The University Textbook (2017) has therefore been thoroughly reviewed and edited (see Appendix M) and will inform the development of a flexible curriculum that includes content topics, as well as learning aims and objectives. The curriculum outline will be presented in the Final Report.

It is anticipated that a future step will be to supplement the curriculum outline with detailed lesson plans that can be adapted and implemented in universities worldwide.

## NEXT STEPS

The next and final step of this project is to produce the Final Report containing the completed version of each work package. This Interim Report includes the final version of:

- Work Package 1
- Work Package 5

The Final Report will include the addition of a completed:

- Work Package 2: comparison of data collected to original data.
- Work Package 3: results from all five times points.
- Work Package 4: results from all five time points.
- Work Package 6: curriculum outline for university based anti-doping education informed by the findings of the initial five work packages.

## REFERENCES

- Backhouse, S. H., Whitaker, L., Patterson, L., Erickson, K., & McKenna, J. (2016). *Social Psychology of Doping in Sport: A Mixed Narrative Synthesis*. Retrieved from: [https://www.wada-ama.org/sites/default/files/resources/files/literature\\_review\\_update\\_-\\_final\\_2016.pdf](https://www.wada-ama.org/sites/default/files/resources/files/literature_review_update_-_final_2016.pdf)
- Backhouse, S.H., Erickson, K., & Whitaker, L. (2017). Preventing Doping in Youth Sport. In Knight, C., Harwood, C. & Gould, D. (Eds.), *Sport Psychology for Young Athletes* (1st ed.): Routledge.
- Backhouse, S. H., McKenna, J., & Patterson, L. (2009). *Prevention through Education: A Review of Current International Social Science Literature; A focus on the prevention of bullying, tobacco, alcohol and social drug use in children, adolescents and young adults*. Retrieved from: [https://www.wada-ama.org/sites/default/files/resources/files/backhouse\\_prevention\\_through\\_education\\_final\\_2009.pdf](https://www.wada-ama.org/sites/default/files/resources/files/backhouse_prevention_through_education_final_2009.pdf)
- Barkoukis, V., Kartali, K., Lazuras, L., Haralambos, T. (2016). Evaluation of an anti-doping intervention for adolescents: Findings from a school-based study. *Sport Management Review*, 19(1), 23-24. doi: 10.1016/j.smr.2015.12.003.
- Bell, B. (2008). StepUP! Program. Accessed April 17, 2017: [www.stepupprogram.org](http://www.stepupprogram.org).
- Bowers, L. D. (2014). Counterpoint: The Quest for Clean Competition in Sports: Deterrence and the Role of Detection. *Clinical Chemistry*, 60(10), 1279-1281. doi:10.1373/clinchem.2014.226175
- Buckman, J. F., Farris, S. G., & Yusko, D. A. (2013). A national study of substance use behaviors among NCAA male athletes who use banned performance enhancing substances. *Drug and Alcohol Dependence*, 131(1-2), 50-55. doi:<http://dx.doi.org/10.1016/j.drugalcdep.2013.04.023>
- Elbe, A.-M., & Brand, R. (2016). The Effect of an Ethical Decision-Making Training on Young Athletes' Attitudes Toward Doping. *Ethics & Behavior*, 26(1), 32-44. doi:10.1080/10508422.2014.976864
- Erickson, K., Patterson, L., & Backhouse, S. (2018). 'The process isn't a case of report it and stop': Athletes' lived experience of whistleblowing on doping in sport. *Sport Management Review*, 22(5), 724-735.

- Erickson, K., McKenna, J., & Backhouse, S. H. (2015). A qualitative analysis of the factors that protect athletes against doping in sport. *Psychology of Sport and Exercise*, 16, Part 2, 149-155. doi: <http://dx.doi.org/10.1016/j.psychsport.2014.03.007>
- Erickson, K., Backhouse, S. H., & Carless, D. (2017). "I don't know if I would report them": Student-athletes' thoughts, feelings and anticipated behaviours on blowing the whistle on doping in sport. *Psychology of Sport and Exercise*, 30, 45-54. doi:<http://dx.doi.org/10.1016/j.psychsport.2017.01.005>
- FISU. (2017). FISU readies Taipei 2017 anti-doping measures for action. Retrieved from <http://www.fisu.net/news/multisports/fisu-readies-taipei-2017-anti-doping-measures-for-action>
- Hallward, L. & Duncan, L. (2018). A Qualitative Exploration of Athletes' Past Experiences With Doping Prevention Education. *Journal of Applied Sport Psychology*, (31)2, 187-202. <https://doi.org/10.1080/10413200.2018.1448017>
- Latane, B., & Darley, J. M. (1970). *The unresponsive bystander: Why doesn't he help*. New York: Appleton Century Crofts.
- Latane, B., & Nida, S. (1981). Ten years of research on group size and helping. *Psychological Bulletin*, 89, 308-324. doi:10.1037/0033-2909.89.2.308
- Martinez, C. (2016, August 25). 2016 Rio Olympics: Current NCAA student-athletes competing by school. Retrieved from: <http://www.ncaa.com/news/ncaa/article/2016-07-28/2016-rio-olympics-ncaa-olympic-student-athletes-school>
- NCAA. (2018). NCAA student-athletes at the 2018 Winter Olympics in PyeongChang. Retrieved from: <https://www.ncaa.com/news/ncaa/ncaa-and-olympics/2018-02-19/ncaa-student-athletes-2018-winter-olympics-pyeongchang>
- NCAA. (2017). NCAA Drug-Testing Program 2017-18.
- Ntoumanis, N., Ng, J. Y. Y., Barkoukis, V., & Backhouse, S. (2014). Personal and Psychosocial Predictors of Doping Use in Physical Activity Settings: A Meta-Analysis. *Sports Medicine*, 44(11), 1603-1624. doi:10.1007/s40279-014-0240-4
- Patterson, L. B., & Backhouse, S. H. (2018). "An important cog in the wheel", but not the driver: Coaches' perceptions of their role in doping prevention. *Psychology of Sport and Exercise*, 37, 117-127. doi:<https://doi.org/10.1016/j.psychsport.2018.05.004>
- Patterson, L. B., Duffy, P. J., & Backhouse, S. H. (2014). Are Coaches Anti-Doping? Exploring Issues of Engagement With Education and Research. *Substance Use & Misuse*, 49(9), 1182-1185. doi:10.3109/10826084.2014.912469

- Patterson, L. (2014). *Using a logic model approach to investigate anti-doping education for coaches*. Unpublished Thesis. Leeds Beckett University. UK.
- WADA. (2015). World Anti-Doping Code. Montreal, Quebec: WADA.
- WADA. (2017). The University Anti-Doping Textbook.
- Weaving, C., & Teetzel, S. (2014). Getting Jacked and Burning Fat: Examining Doping and Gender Stereotypes in Canadian University Sport. *Journal of Intercollegiate Sport*, 7(2), 198-217.
- Wylleman, P., De Brandt, K., Rosier, N., Van Rossem, N. & Kegelaers, J. (2016) Final report: A lifespan and holistic approach to the influence of career transitions on athletes drug-taking behaviors. Report to WADA. Retrieved from:  
[https://pdfs.semanticscholar.org/add7/1b413319bd4c208ece5c91f43a7583b4a4f0.pdf?\\_ga=2.208690330.967271928.1577596612-1398673953.1577596612](https://pdfs.semanticscholar.org/add7/1b413319bd4c208ece5c91f43a7583b4a4f0.pdf?_ga=2.208690330.967271928.1577596612-1398673953.1577596612)

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Appendix A: Original RE>ACT Description  
Appendix B: Time 4 Evaluation Tool  
Appendix C: Gatekeeper Letter for Time 4  
Appendix D: Original RE>ACT Session Content  
Appendix E: Refined RE>ACT Session  
Appendix F: RE>ACT ASP Logic Model  
Appendix G: Student-Athlete Evaluation Tool  
Appendix H: ASP Evaluation Tool  
Appendix I: RE>ACT Student-Athlete Information Sheet  
Appendix J: RE>ACT ASP Information Sheet  
Appendix K: WP 5 Survey Information Sheet & Survey Tool  
Appendix L: Table 2 Supplemental Information  
Appendix M: University Text Book Edits



## Appendix A

### Original RE>ACT Description



#### **Towards a Vision for Prevention: Testing the feasibility and efficacy of a Clean Sport Bystander Intervention Program (RE>ACT)**

[www.leedsbeckett.ac.uk/react](http://www.leedsbeckett.ac.uk/react)

### Background

The 'RE>ACT' ('recognize' and 'take action') project stems from PhD research conducted at Leeds Beckett University (LBU; Leeds, UK) and is being funded by the International Olympic Committee. It also has the support of the National Collegiate Athletic Association (NCAA), UK Anti-Doping and LBU. RE>ACT offers a viable alternative to current anti-doping education practice by developing a bystander intervention to address doping behaviors. Specifically, we will explore if confrontation can be employed as an effective self-regulation approach to address substance use behaviors within the student-athlete population (US, UK and Canada). To do so, we will apply the established situational model of bystander intervention (Latane & Darley, 1970) which outlines five decision-making steps towards intervention:

- 1) notice the event
- 2) interpret the event as a problem
- 3) assume personal responsibility
- 4) know how to help
- 5) implement the help – RE>ACT!

The StepUP! Bystander Intervention Program ("StepUP!," N.D.) has been used as a guiding framework for the development of the RE>ACT intervention. StepUP! was designed specifically for student-athletes and is the most used bystander intervention across NCAA universities. It is backed by research support from various athletic departments (e.g., Long, 2012) demonstrating its effectiveness for increasing bystanders' intentions to intervene and the original design emerged from a pilot study indicating that student-athletes wish to help friends in distress but feel ill-equipped to do so safely and effectively (StepUP!, 2006). Importantly, similar concerns were raised in preliminary research with student-athletes from the US and UK (Erickson, PhD Thesis); student-athletes asserted that doping use warrants action, however, as most were reluctant to report it and uncertain about the appropriateness of confronting users, they frequently suggested overlooking it. Accordingly, our project presents a modified StepUP! bystander intervention specifically targeting substance use behaviors that have been identified as particularly relevant to student-athlete populations (i.e., dietary supplements, appearance and performance enhancing drugs (APEDs), prescription medications, and recreational drugs).

The main aims of RE>ACT are to:

- (1) raise student-athletes' awareness to intervention-worthy substance use (i.e., dietary supplements, APEDs, prescription medications, and recreational drugs) situations on campus,
- (2) help student-athletes recognize their personal role and responsibility in such situations,
- (3) equip student-athletes with the skills/knowledge necessary to safely confront these situations.

Importantly, the life skills (e.g., confrontation, communication) introduced and learned during the sessions will also serve athletes in situations beyond sport (e.g., classroom, relationships, future jobs).

### **Program Design**

We are aiming to recruit 100 (Control Group: N =50, Experimental Group: N = 50) student-athletes from each university across two time points - once for the intervention and again for a follow-up evaluation (i.e., survey). Student-athletes and/or entire teams will be pragmatically assigned to one of two groups (i.e., active-control, experimental) based on availability.

### **Experimental Condition**

RE>ACT consists of two workshops. The first workshop (75 minutes) will familiarize student-athletes with the theories and evidence underpinning the situational model of bystander intervention (i.e., 5 Steps towards Intervention) and introduce concepts related to effective confrontation. This will be followed by a topic-specific workshop (90 minutes) covering: dietary supplements, APEDs, prescription medications (e.g., Adderall, painkillers), and recreational drugs. Each workshop will be interactive, including discussions and opportunities to practice addressing hypothetical substance use scenarios.

### **Active-Control Condition**

Participants will receive a 60-minute anti-doping education workshop that will focus on detection-deterrence approaches. Key compliance messages will be shared (e.g., WADA Prohibited List, Doping Control Procedures) and participants will be signposted to relevant anti-doping websites (e.g., WADA and National Anti-Doping Agency websites).

Each session (i.e., Control and Experimental) will be delivered face-to-face by Dr Erickson. Ideally, all sessions will be delivered over the span of a week. However, given student-athletes' busy schedules, we are prepared to be flexible and accommodating in the delivery approach. We aim to have all sessions in the US and Canada delivered during the 2016/2017 academic year.

### **Program Evaluation**

For the evaluation, both groups will be invited to complete the same questionnaire pre-, post- and three-month post-evaluation (approximately 5 minutes). Participants will also be invited to take part in a post-intervention interview (15-30 minutes) to discuss their experience with the project.



**Appendix B**  
*T4 Evaluation Tool*

## Appendix C

### Gatekeeper Letter Time point 4



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UNIVERSITY



## INFORMATION SHEET

### For Gatekeepers

#### Invitation

Student-athletes at your university previously participated in RE>ACT - A Clean Sport Bystander Intervention Program. In an effort to measure the long-term impact of the program we have created a final evaluation survey to be completed by previous RE>ACT participants. Your support in disseminating this final survey is really important for the overall success of the intervention, and we want to thank you in advance for your ongoing involvement in this project. Please find below a reminder of what has happened to date in the project and what this final step involves.

The project is being conducted by a research team from Leeds Beckett University (LBU; Leeds, UK) and received funding from the International Olympic Committee (IOC). This final phase of the project has the financial support of the World Anti-Doping Agency (WADA).

#### What is the project about?

Substance use (i.e., dietary supplements, appearance and performance enhancing drugs (APEDs) prescription medications, and recreational drugs) is a growing concern across all sports and competitive levels. As a result, individuals are increasingly encouraged to play an active role in discouraging it. In support of this, our project aims to raise awareness of intervention-worthy substance use situations in sport and empower student-athletes to take personal responsibility and confront such situations. Being knowledgeable and prepared if/when faced with these situations increases the likelihood that student-athletes will do something. In turn, encouraging a community-based approach to deterring substance use.

#### What does the study involve?

The RE>ACT sessions took place on your campus and student-athletes were assigned to one of two groups. Participants in Group 1 engaged in two consecutive sessions. The first session (75 minutes) familiarized student-athletes with the theories and evidence underpinning the intervention. A topic-specific session (90 minutes) followed, covering: dietary supplements, APEDs, prescription medications (e.g. Adderall, painkillers), and recreational drugs. In Group 2, participants received a 60-minute anti-doping education session that focused on detection-deterrence approaches. Key compliance messages were shared (e.g., WADA Prohibited List, Doping Control Procedures) and participants were signposted to relevant anti-doping websites (e.g., WADA and National Anti-Doping Agency websites). For the evaluation, both groups were invited to complete the same questionnaire before/after the RE>ACT session and 3 months post-intervention. Participants were also invited to take part in a post-intervention interview to discuss their experience with the project. As a final step in this research

project, we are now inviting student-athletes to complete the survey one last time in an attempt to measure the potential long-term impact of participating in the intervention. This final survey will be accessed and completed online.

### **Do your student-athletes have to take part?**

No. It is up to you whether you agree to disseminate the final survey to relevant student-athletes. However, your student-athletes' contribution is very important to the success of this intervention. Your decision about whether or not to allow your student-athletes to participate in this final step will not affect your current or future relationship with the researcher or the project supporters. Furthermore, if you agree to share the invitation, your student-athletes may choose not to participate, or stop participating, at any time without penalty.

### **Are there benefits to being in the research project?**

Participating in this project provided student-athletes with an opportunity to openly discuss substance use in sport with fellow student-athletes. It also offered a chance for student-athletes to gain and practice skills for addressing substance use behaviors in sport. Importantly, the communication skills introduced and practiced in this project can also be utilized to address problem situations extending beyond sport (e.g., workplace, academics, relationships).

Upon completion of this final survey, student-athletes will have the option to enter themselves in a prize draw. Specifically, student-athletes will have the option of clicking a link that takes them to a separate web browser – **not linked to their survey data** – and here they can enter their email address into the prize draw. Two winners will be selected at random and receive a £50 Amazon Voucher.

### **What are the possible risks of taking part in this study?**

Apart from giving up personal time, we do not expect there will be any risks or inconveniences associated with taking part in the final step of this project. Yet, we are aware of the fact that student-athletes may not feel comfortable thinking about substance use in sport. Importantly, they will not be asked to identify anyone who has or is currently using banned substances and they will not be reported for personal use of banned substances. Also, participants will be provided with national and international resources related to substance use. As well, if the research causes any concerns or upsets any participants, we can refer them to a counselor.

### **What about confidentiality?**

All records of this project will be kept private and anonymous. Members of the LBU research team will be the individuals with access to the information collected. Electronic data will be password-protected and hard copy data (i.e., questionnaires) will be in locked storage. A digital recorder will only be used during interviews if participants consent to this. The results of this research may be presented at conferences and/or published in professional journals. Neither your university, team or individuals will be identifiable in any results that are published or presented. Participants **will not** be reported for personal use of banned substances.

### **Legal basis for processing personal data?**

As part of this project we will be recording personal data. This will be processed in accordance with the General Data Protection Regulation (GDPR). Under GDPR the legal basis for processing the personal data will be public interest/the official authority of the University.

### **Participants rights?**

Participants have the right to request to see a copy of the information we hold about them and to request corrections or deletions of the information that is no longer required. They also have the right to withdraw from this project at any time without giving reasons and without consequences. Participants also have the right to object to us processing relevant personal data however, please note that once the data are being analyzed and/or results published it may not be possible to remove personal data from the study.

### **What will happen next?**

If you agree to invite your student-athletes to participate in the final RE>ACT survey please confirm your willingness with Dr Kelsey Erickson (contact details at the end of this information sheet). She will then invite you to send the project information and survey link to relevant student-athletes.

### **Who can I contact for further information about this study or if I wish to complain?**

Please feel free to contact a member of the research team to discuss this study in further detail:

*Principal Investigator:* Dr Kelsey Erickson, Email: [K.Erickson@leedsbeckett.ac.uk](mailto:K.Erickson@leedsbeckett.ac.uk)

If you would like independent advice about any aspect of the study, please contact Dr Toni Williams, Senior Lecturer; email: [T.L.Williams@leedsbeckett.ac.uk](mailto:T.L.Williams@leedsbeckett.ac.uk)

You have a right to lodge a complaint regarding data protection issues and to do this you can contact the University's Compliance & Casework team on 0113 812 3401 or [legal@leedsbeckett.ac.uk](mailto:legal@leedsbeckett.ac.uk).

Thank you for your help with this important research project.

Web: [www.leedsbeckett.ac.uk/react](http://www.leedsbeckett.ac.uk/react)      Twitter: [@cleansportreact](https://twitter.com/cleansportreact)      Facebook: [@cleansport.react](https://www.facebook.com/cleansport.react)

## Appendix D

### Original RE>ACT Session Content



#### Session

Introduces:

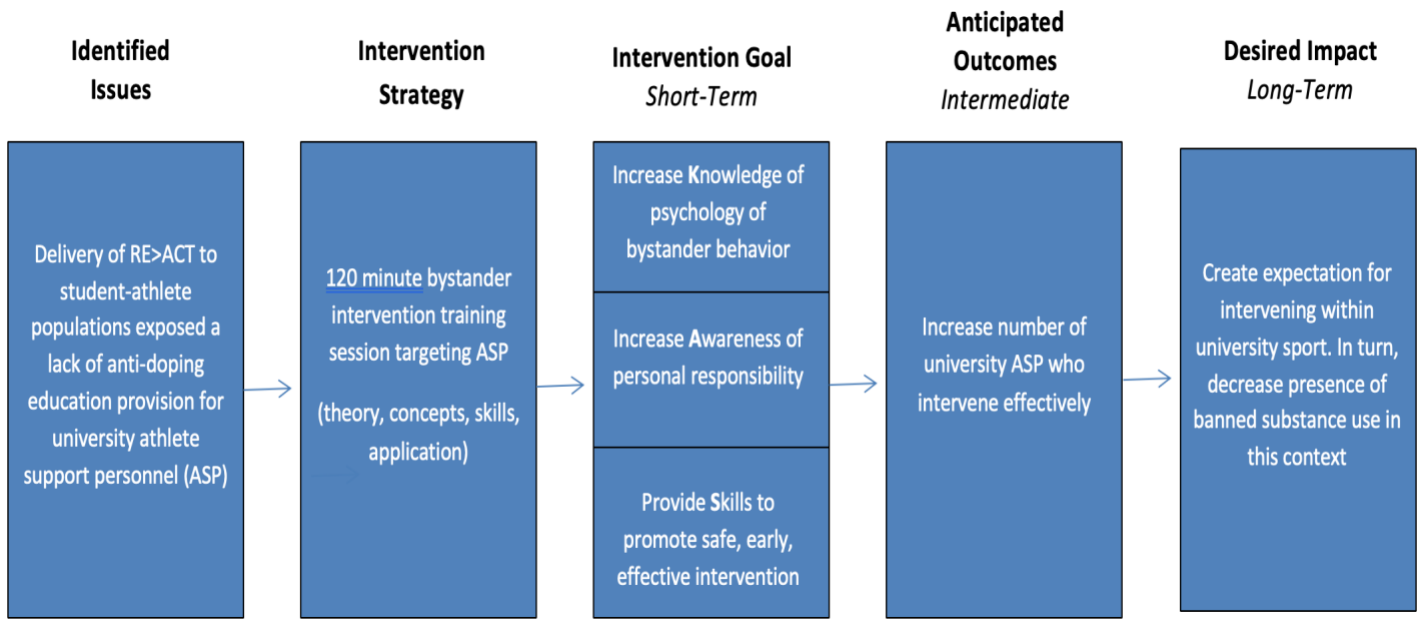
- The bystander effect
- The five steps towards intervention
- Strategies for overcoming the bystander effect
- The RE>ACT Model
- Definition of 'Doping' and the ten anti-doping rule violations (ADRVs)
- Dietary Supplements (e.g., risks and resources for minimizing these)
- Appearance and Performance Enhancing Drugs
- Prescription Medications (including cognitive enhancers and painkillers)
- Banned Illicit drugs
- Costs of *not* intervening
  - Loss of eligibility, reputational damage, relational damage, future career implications
  - Expectations (and consequences) for athlete support personnel
  - Implications for clean athletes who are impacted by the behavior of doping athletes
- Signposted to available resources for staying involved in RE>ACT and gathering further information on doping related issues

Main methods of delivery and engagement:

- Videos
- Scenarios
- Group discussion, reflection and debate
- Examples from sport



**Appendix F**  
*RE>ACT ASP Logic Model*



## **Appendix G**

### *Student-Athlete Evaluation Tool*

## **Appendix H**

*ASP Evaluation Tool*

## Appendix I

### RE>ACT Student-Athlete Information Sheet

#### INFORMATION SHEET

##### For Gatekeepers – Student-athletes

###### Invitation

Student-athletes at your university are being invited to take part in RE>ACT - A Clean Sport Bystander Intervention Program. Your support is really important for the success of this intervention, and we want to thank you in advance for your help. Before you make any decisions, it is important for you to understand why the project is taking place and what it involves. Please review the information below and feel free to raise any questions you may have with the research team.

This study is being conducted by a research team from Leeds Beckett University (LBU; Leeds, UK) and is funded by a grant from the World Anti-Doping Agency (WADA).

###### What is the project about?

Substance use (i.e., dietary supplements, appearance and performance enhancing drugs (APEDs) prescription medications, and illicit drugs) is a growing concern across all sports and competitive levels. As a result, individuals are increasingly encouraged to play an active role in discouraging it. In support of this, our project aims to raise awareness of intervention-worthy substance use situations in sport and empower individuals to take personal responsibility and confront such situations. Being knowledgeable and prepared if/when faced with these situations increases the likelihood that individuals will do something.

###### What does the study involve?

This project will take place on your campus. If student-athletes agree to participate, they will be invited to take part in one (120 minute) interactive session, covering the theories and evidence underpinning the intervention and introducing topic-specific content (i.e., dietary supplements, APEDs, prescription medications, and illicit drugs). The session will be delivered in person by a member of the research team and will be interactive, including discussions and opportunities to practice addressing hypothetical substance use scenarios. For the evaluation, student-athletes will be invited to complete the same questionnaire (approximately 10 minutes) at five different timepoints (3 months pre-, start/finish of RE>ACT session, 3 months post-, and 12 months post-intervention) for evaluation purposes. The evaluation will be completed in the presence of a researcher at time points 1-3 and online at a time of student-athletes' own convenience for time points 4 and 5. Participants will also be invited to take part in a post-intervention interview (15-30 minutes) to discuss their experience with the project following participation in the RE>ACT session.

###### Do student-athletes have to take part?

No. It is up to you whether you agree to invite student-athletes at your university to participate. However, the contribution of student-athletes is very important to the success of this intervention. Your decision about whether or not to allow student-athletes to participate will not affect your current or future relationship with the research team. Furthermore, if you agree to participate in the project,

student-athletes may choose not to participate, or stop participating, at any time without penalty. If student-athletes choose to withdraw during the face to face sessions (i.e., initial evaluation and/or RE>ACT session) they can simply tell the researcher they no longer want to participate and can remove themselves from the session and any data they have provided in that session can be destroyed. Alternatively, if they decide to cease participation during the time point 4 or 5 survey they can simply close the web browser. These options will be outlined in the information sheet.

### **Are there benefits to being in the research project?**

Participating in this project will provide student-athletes with an opportunity to openly discuss substance use in sport with fellow student-athletes. Participation also offers an opportunity for student-athletes to gain and practice skills for addressing substance use behaviors in sport. In turn, this has the potential to increase the number of individuals actively involved in discouraging substance use. Thus, encouraging a community-based approach to substance use prevention in sport. Importantly, the communication skills introduced and practiced in this project can also be utilized to address problem situations in sport extending beyond substance use (e.g., hazing, bullying, abuse) and even beyond sport (e.g., workplace, academics, relationships).

Student-athletes will also be invited to enter themselves in a prize draw following the completion of the evaluation at time points 4 and 5. Specifically, they will have the option of clicking a link that takes them to a separate web browser – **not linked to their survey data** – and here they can enter their email address into the prize draw.

### **What are the possible risks of taking part in this study?**

Apart from giving up personal time, we do not expect there will be any risks or inconveniences associated with taking part in this project. Yet, we are aware of the fact that student-athletes may not feel comfortable talking about substance use in sport. Importantly, they will not be asked to identify anyone who was or is currently using substances. Also, participants will be provided with national and international resources related to substance use. If the research causes any concerns or upsets any participants, we can refer them to a counselor. The researcher will also remain on campus after delivery should participants have any further questions and/or concerns.

### **What about confidentiality?**

All records of this project will be kept private and anonymous. The research team at Leeds Beckett University will be the only individuals with access to the information collected. Electronic data will be password-protected and hard copy data (i.e., questionnaires) will be in locked storage. A digital recorder will only be used during interviews if participants consent to this. Student-athletes have a right to access their information in accordance with relevant privacy laws. The results of this research may be presented at conferences and/or published in professional journals. Neither your university, team or individual student-athletes will be identifiable in any results that are published or presented.

### **What will happen next?**

If you agree to invite student-athletes to participate in RE>ACT, please confirm this willingness with Dr Kelsey Erickson (contact details at the end of this information sheet). She will then discuss the next steps with you. It is envisaged that with your guidance, appropriate times and locations for the initial

evaluation and actual RE>ACT session will be determined. This may involve working around particular practice and game schedules and we will accommodate this as best as possible. Student-athletes will be provided with details of the project via an information sheet before they make a decision about whether or not to take part.

**Who can I contact for further information about this study?**

Please feel free to contact a member of the research team to discuss this study in further detail:

**Principal Investigator:** Dr Kelsey Erickson, **Email:** [K.Erickson@leedsbeckett.ac.uk](mailto:K.Erickson@leedsbeckett.ac.uk)

If you would like independent advice about any aspect of the study, please contact Dr Toni Williams, Senior Lecturer; email: [T.L.Williams@leedsbeckett.ac.uk](mailto:T.L.Williams@leedsbeckett.ac.uk)

Thank you for your help with this important research project.

**Web:** [www.leedsbeckett.ac.uk/react](http://www.leedsbeckett.ac.uk/react) **Twitter:** @cleansportreact **Facebook:** @cleansport.react

## **Appendix J**

### *RE>ACT ASP Information Sheet*

#### **INFORMATION SHEET**

#### **For Gatekeepers - ASP**

##### **Invitation**

Student-athletes at your university are being invited to take part in RE>ACT - A Clean Sport Bystander Intervention Program. Alongside this, we would also like to invite athlete support personnel (ASP; e.g., coaches, athletic trainers, athletic administrators, etc.) to participate in RE>ACT. Your support is really important for the success of this intervention, and we want to thank you in advance for your help. Before you make any decisions, it is important for you to understand why the project is taking place and what it involves. Please review the information below and feel free to raise any questions you may have with the research team.

This study is being conducted by a research team from Leeds Beckett University (LBU; Leeds, UK) and is funded by a grant from the World Anti-Doping Agency (WADA).

##### **What is the project about?**

Substance use (i.e., dietary supplements, appearance and performance enhancing drugs (APEDs) prescription medications, and illicit drugs) is a growing concern across all sports and competitive levels. As a result, individuals are increasingly encouraged to play an active role in discouraging it. In support of this, our project aims to raise awareness of intervention-worthy substance use situations in sport and empower individuals to take personal responsibility and confront such situations. Being knowledgeable and prepared if/when faced with these situations increases the likelihood that individuals will do something. We are therefore delivering RE>ACT to (a) student-athletes and (b) ASP in order to encourage a community-based approach to deterring substance use.

##### **What does the study involve?**

This project will take place on your campus. If ASP agree to participate, they will be invited to take part in one (120 minute) interactive session, covering the theories and evidence underpinning the intervention and introducing topic-specific content (i.e., dietary supplements, APEDs, prescription medications, and illicit drugs). The session will be delivered in person by a member of the research team and will be interactive, including discussions and opportunities to practice addressing hypothetical substance use scenarios. Consistent with the approach followed for delivering RE>ACT to student-athletes, ASP will be invited to complete the same questionnaire (approximately 10 minutes) at five different timepoints (3 months pre-, start/finish of RE>ACT session, 3 months post-, and 12 months post-intervention) for evaluation purposes. The evaluation will be completed in the presence of a researcher at time points 1-3 and online at a time of individuals' own convenience for time points 4 and 5. Participants will also be invited to take part in a post-intervention interview (15-30 minutes) to discuss their experience with the project following participation in the RE>ACT session.

##### **Do ASP have to take part?**

No. It is up to you whether you agree to invite ASP at your university to participate. However, the contribution of ASP is very important to the success of this intervention. Your decision about whether or not to allow ASP to participate will not affect your current or future relationship with the research team. Furthermore, if you agree to participate in the project, ASP may choose not to participate, or stop participating, at any time without penalty. If ASP choose to withdraw during the face to face sessions (i.e., initial evaluation and/or RE>ACT session) they can simply tell the researcher they no longer want to participate and can remove themselves from the session and any data they have provided in that session can be destroyed. Alternatively, if they decide to cease participation during the time point 4 or 5 survey they can simply close the web browser. These options will be outlined in the information sheet.

### **Are there benefits to being in the research project?**

Participating in this project will provide ASP with an opportunity to openly discuss substance use in sport with peers which, in turn, will prepare them to discuss substance use related issues with student-athletes. Participation also offers an opportunity for ASP to gain and practice skills for addressing substance use behaviors in sport. In turn, this has the potential to increase the number of individuals actively involved in discouraging substance use. Thus, encouraging a community-based approach to substance use prevention in sport. Importantly, the communication skills introduced and practiced in this project can also be utilized to address problem situations in sport extending beyond substance use (e.g., hazing, bullying, abuse) and even beyond sport (e.g., workplace, academics, relationships).

ASP will also be invited to enter themselves in a prize draw following the completion of the evaluation at time points 4 and 5. Specifically, they will have the option of clicking a link that takes them to a separate web browser – **not linked to their survey data** – and here they can enter their email address into the prize draw

### **What are the possible risks of taking part in this study?**

Apart from giving up personal time, we do not expect there will be any risks or inconveniences associated with taking part in this project. Yet, we are aware of the fact that ASP may not feel comfortable talking about substance use in sport. Importantly, they will not be asked to identify anyone who was or is currently using substances nor will you be reported for personal use of banned substances. Also, participants will be provided with national and international resources related to substance use. If the research causes any concerns or upsets any participants, we can refer them to a counselor. The researcher will also remain on campus after delivery should participants have any further questions and/or concerns.

### **What about confidentiality?**

All records of this project will be kept private and anonymous. The research team at Leeds Beckett University will be the only individuals with access to the information collected. Electronic data will be password-protected and hard copy data (i.e., questionnaires) will be in locked storage. A digital recorder will only be used during interviews if participants consent to this. ASP have a right to access their information in accordance with relevant privacy laws. The results of this research may be presented at conferences and/or published in professional journals. Neither your university, team or individual ASP will be identifiable in any results that are published or presented. Importantly, you **will not** be reported for personal use of banned substances in sport.



### **What will happen next?**

If you agree to invite ASP to participate in RE>ACT, please confirm this willingness with Dr Kelsey Erickson (contact details at the end of this information sheet). She will then discuss the next steps with you. It is envisaged that with your guidance, appropriate times and locations for the initial evaluation and actual RE>ACT session will be determined. This may involve working around particular practice and game schedules and we will accommodate this as best as possible. ASP will be provided with details of the project via an information sheet before they make a decision about whether or not to take part.

### **Who can I contact for further information about this study?**

Please feel free to contact a member of the research team to discuss this study in further detail:

**Principal Investigator:** Dr Kelsey Erickson, **Email:** [K.Erickson@leedsbeckett.ac.uk](mailto:K.Erickson@leedsbeckett.ac.uk)

If you would like independent advice about any aspect of the study, please contact Dr Toni Williams, Senior Lecturer; email: [T.L.Williams@leedsbeckett.ac.uk](mailto:T.L.Williams@leedsbeckett.ac.uk)

Thank you for your help with this important research project.

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## **Appendix K**

*WP 5 Information Sheet & Survey*

*Table 2 Supplemental Information*

**Appendix M**  
*University Textbook Edits*



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