

Provision of Guidance for the Development of a Sustainable, Cooperative and International Anti-Doping Training Programme for High Performance Coaches

Report prepared for the World Anti-Doping Agency by Leeds Beckett University in partnership with the International Council for Coaching Excellence

Research Team:

Dr Laurie Patterson

Prof Susan Backhouse

Dr Sergio Lara-Bercial



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Executive Summary

Context

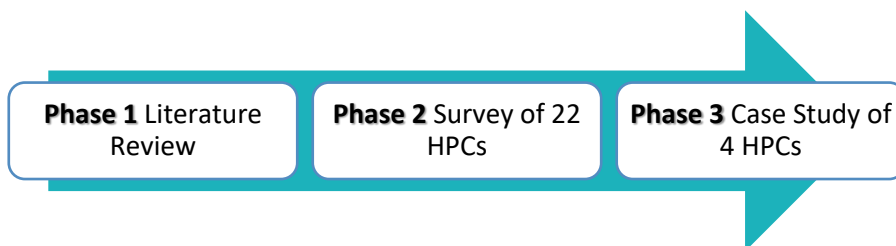
Doping behaviours have permeated a multitude of sports across a number of nations to become a major threat to both the integrity of sport and the health of sportspeople at both amateur and professional levels of competition.

Evidence shows that doping behaviours are influenced by a complex interaction of individual, environmental and situational factors. In the context of this work, theoretical, empirical and anecdotal evidence highlights the importance of coaches in relation to these behaviours.

Recognising the pivotal role that coaches play in clean sport, the World Anti-Doping Agency (WADA) commissioned the International Council for Coaching Excellence (ICCE) to conduct a research project to explore the potential of High Performance Training Centres (HPCs) to become anti-doping training providers. This report provides guidance for the development of a sustainable, cooperative and international anti-doping training programme for high performance coaches.

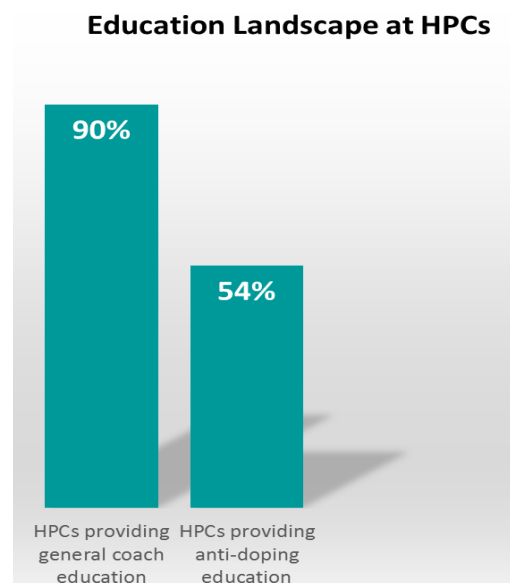
Research design

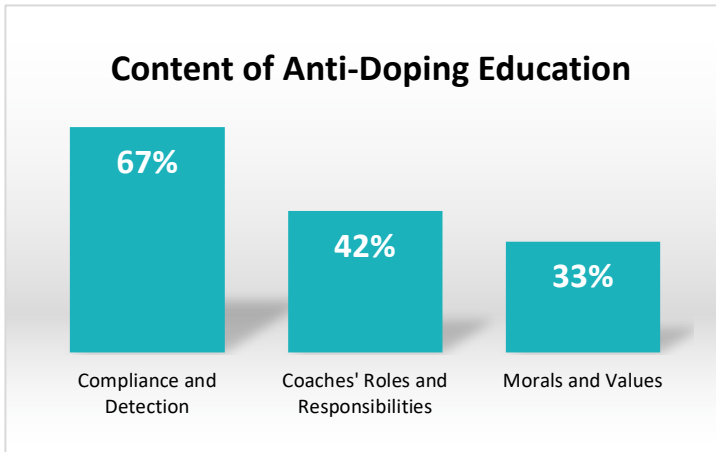
Utilising a three-phased mixed-methods approach, the current provision of anti-doping education for high performance coaches was examined. Shaped by our understanding of contextual factors (e.g., provision of general coach education and development; coach (anti-)doping attitudes and behaviours) recommendations for future anti-doping education for coaches were offered.



Research insights

Almost all (90%) centres provided general coach education opportunities. Yet, only half of the centres (54%) provided anti-doping education to coaches. While both the survey and interviews revealed that practice varied across centres who provided anti-doping education to coaches (n=14), opportunities were most often provided by the national anti-doping organisation (NADO) (50%) or by the NADO in combination with the HPC (29%), rather than by the HPC alone (21%).





A number of **methods of delivery** were used, including face-to-face workshops/seminars, online resources and/or printed/electronic materials.

Education opportunities primarily covered compliance and detection-based content (e.g., testing processes, rules) (67%), but some centres also included content related to coaches' roles and responsibilities (42%) and moral principles of drug-free sport (33%).

The **main challenge** for centres in providing anti-doping education for coaches is resource, including knowledge/expertise, time and money. To address this, many centres (50% of N=22) reported that responsibility for anti-doping education for coaches should be shared between sporting and anti-doping organisations. Stakeholders also described collaborations between these organisations as an important means of increasing consistency and consolidation of anti-doping messaging to coaches – which they proposed enhanced the likelihood of coaches engaging with not only anti-doping education opportunities, but also anti-doping efforts/actions.

Conclusions

The findings suggest that HPCs offer a viable context for implementing anti-doping education for coaches. The rationale for this is two-fold:

1. Coaches are present in HPCs and this context provides the opportunity to interact with the target population through existing general coach education provision.
2. While there is variation in interest and involvement in providing anti-doping education among HPCs, no organisation demonstrated an unwillingness to support coaches to fulfil their anti-doping roles and responsibilities.

However, resources are limited and this directly impacts the HPCs capability to implement anti-doping education for their coaches. Therefore, collaborations between HPCs and other organisations are essential to making anti-doping education for coaches in HPCs work.

Recommendations

In light of these findings, WADA might consider the following activities:

- Target HPCs to raise their awareness of resources/programmes that WADA has available for immediate implementation.
- Encourage HPCs to undertake consultations (i.e., needs analysis) with coaches to establish their capability (e.g., knowledge, skills), motivation (e.g., to act to prevent doping) and opportunity (e.g., access to resources) to protect the rights of their athletes, and the wider community to clean sport. This insight should guide the development of tailored and targeted content and interventions.
- Co-construct appropriate programme monitoring and evaluation approaches.
- Explore informal/non-formal channels to support coach education programmes in the long-term.
- Develop and communicate minimum international standards for coach anti-doping education.

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1. Introduction

Doping has become a major threat to the integrity of sport worldwide. It also poses a potential risk to the health and welfare of elite, development and recreational athletes. In this complex landscape, the coach has emerged as a central figure in the safeguarding of both the values of sport and the well-being of sportsmen and women. This is particularly relevant in the high-performance environment, where the stakes are high and the world is watching.

Recognising the pivotal role that high performance coaches play in clean sport, the World Anti-Doping Agency (WADA) commissioned the International Council for Coaching Excellence (ICCE) to conduct a research project entitled:

Provision of Guidance for the Development of a Sustainable, Cooperative and International Anti-Doping Training Programme for High Performance Coaches

This project emerged from a fundamental belief that coaches can shape and affect athlete attitudes and behaviours towards doping. More so, coaches have a moral and professional responsibility to do so. Yet, their own development and education, alongside the conditions in which they work, can thwart a coach's ability, and motivation, to fulfil this very important role. For this reason, this research aimed to explore the potential of High Performance Centres (HPCs) to become anti-doping training providers and thus support high performance coaches in their own working environments.

2. Project Objectives

The WADA commissioned the research with the following objectives in mind:

- A literature review spanning the fields of coaches' doping-related opinions/experiences and coach development in high performance sport.
- An international survey of High Performance Centres to identify key issues in the provision of anti-doping education for coaches.
- A compendium of emergent practice in the implementation of anti-doping education for coaches in high performance sport through case-study examples.
- A guidance document for the development of a sustainable, cooperative and international anti-doping training programme for High Performance coaches.

3. Reviewing the Evidence Base

Phase 1 consisted of a review of existing literature covering the areas of 1) coach attitudes and behaviours in relation to doping/anti-doping, 2) anti-doping education for coaches, and 3) coach education and development. The review primarily included research published in peer-reviewed journals. However, where possible, consideration was also given to research previously commissioned by WADA and unpublished independent work.

3.1 Coaches' doping-related attitudes and behaviours

3.1.1 Coaches are an important influencer

While a range of factors have been shown to affect doping behaviours, the importance of social influences has been consistently stressed (e.g., Lentillon-Kaestner, Hagger & Hardcastle, 2011, Ntoumanis et al., 2013). Within the network of a sportsperson, theoretical, empirical and anecdotal evidence highlights the importance of coaches in particular with regard to doping behaviours (e.g., Dubin, 1990, Smith et al., 2010, Morente-Sanchez & Zabala, 2013). Indeed, coaches have been found to play a significant role in a number of doping incidents (e.g., Dubin, 1990, Ungerleider, 2001, USADA & Discovery Education, 2010). Yet, they are also seen as a protective factor against doping (e.g., Kirby, Moran & Guerin, 2011; Erickson et al., 2015). Corroborating this belief, coaches themselves report that they have a responsibility to exert a positive influence and prevent doping (Figved, 1992, Fjeldheim, 1992, Laure, Thouvenin & Lecerf, 2001, Fung & Yuan, 2006, Backhouse et al., 2007, Backhouse, McKenna & Patterson, 2009, Backhouse & McKenna, 2012, Patterson, 2014, Engelberg & Moston, 2016, Allen et al., 2017).

In this vein, Figved (1992) reported that 93% of Norwegian sports trainers and leaders acknowledged that they had a responsibility to try to prevent the use of doping agents. Likewise, Fjeldheim (1992) reported that 100% of Norwegian sports instructors and leaders of community sports organisations acknowledged their responsibility in preventing doping. Similarly high proportions (98%, $n=255/260$) of professional French coaches agreed that they have a role to play in doping prevention (Laure, Thouvenin & Lecerf, 2001). The positive influence of coaches has been reinforced from a sportsperson perspective. For example, when Kirby, Moran and Guerin (2011)

interviewed five admitted dopers, one described his coach as an important factor in why he had remained drug free for so long, saying that 'he was anti-drugs completely' and 'I was very much with him on that' (p. 216). When the individual moved into a new training group with a new coach he began to dope almost immediately, commenting that 'literally within a couple of days [I] was taking stuff' (p. 216). Thus, evidence shows coaches are social influencers in terms of the climate and culture they create through the behaviours they model, encourage and reinforce.

The potential influence of coaches has been recognised in both global anti-doping and coaching policy. Specifically, the World Anti-Doping Code (WADC) (WADA, 2015) states that coaches and other athlete support personnel (ASP) must 'use their influence on athlete values and behaviour to foster anti-doping attitudes' (WADA, 2015, p. 114). In addition, the WADC states that coaches have a responsibility to 1) be knowledgeable of, and comply with, all anti-doping policies and rules applicable to them or their athletes, 2) cooperate with testing/doping control procedures, 3) cooperate with doping-related investigations, 4) refrain from personal use of banned substances, and 5) inform sporting and anti-doping organisations of any involvement in doping behaviours within sports that are not signatories of the Code (p. 114). To reinforce these responsibilities in coaching policy, the International Sport Coaching Framework (ISCF) (ICCE, ASOIF & LMU, 2013) includes compliance with anti-doping regulations and athlete education as an ethical responsibility of coaches.

Coaches are subject to sanctions if they violate any aspect of anti-doping policy. Violations include assisting, encouraging, aiding, abetting or covering up the use of prohibited substances or methods, as well as use, possession, administration, attempted administration, trafficking or attempted trafficking of prohibited substances or methods (WADA, 2015). Moreover, if a coach has either been found guilty of an ADRV, or a criminal, or disciplinary offence equivalent to an ADRV (such as providing banned substances), an athlete will be required to stop any association with that coach. Failure to do so means the athlete may face a ban of up to two years if they continue to work with the coach.

To fulfil these expectations, and ensure that individuals do not fall foul of anti-doping rules, it is important that coaches are given opportunities to develop necessary skills and knowledge - and education programmes are one channel through which such development can be facilitated.

3.1.2 Coaches are approached by sportspeople to discuss doping-related topics

To ensure that anti-doping education programmes for coaches are appropriate and optimally effective, it is helpful to understand coaches' anti-doping roles, including what they do (e.g., doping-related actions and interactions) and why they do it (i.e., underlying reasons and influences). For instance, examining the nature of coaches' doping-related interactions (i.e., topics they discuss and issues they face) can help to ensure that programmes equip coaches with the knowledge and skills they need to operate in their daily practice. Early insights from French coaches revealed that discussions were generally related to the coaches' opinions of the use of substances (51.9% of the time) or information on the prohibited substances list (48.1% of the time) (Laure, Thouvenin and Lecerf, 2001). In her unpublished thesis, Kirby (2011) also found that coaches' conversations with athletes were related to their opinions about performance enhancing substances ($n=11$), the effects of performance enhancing substances ($n=6$) and dosages of substances ($n=5$). Beyond this, Kirby (2011) reported that sportspeople most often requested information from coaches relating to doping-related rules and regulations ($n=21/45$), with very few requests for information regarding health consequences of using substances ($n=4$) and avoiding inadvertent doping (i.e., use of nutritional supplements and medications) ($n=3$). With regard to the latter, more recent work (Patterson, 2014) has determined that UK-based coaches ($N=292$) are most commonly approached to discuss nutritional supplements and the use of medications. Finally, and of great concern, are Ozbek's (2013) reports that 50% of coaches had received requests for doping.

In sum, while there is a need for further research into coaches' doping-/anti-doping related interactions with sportspeople, at this stage it would appear that programmes and resources should cover a wide range of topics from rules, regulations and procedure, to reflections on the coach's philosophy in general, their opinions of doping

and supplement use in particular, and how these might be communicated to athletes through/within their practice.

3.1.3 Coaches self-declare anti-doping attitudes

With regard to coaches' opinions of doping, existing empirical evidence suggests that the majority of coaches report anti-doping attitudes. For example, Fjeldheim (1992) showed that 98% of Norwegian sports instructors and leaders of community sports organisations felt that doping is cheating and 97% disagreed or partially disagreed that doping should be allowed because winning is important. Similarly, Fung and Yuan (2006) concluded that coaches in Hong Kong had anti-doping attitudes based on their findings that 64% of community coaches disagreed or highly disagreed that sportspeople can use drugs to enhance performance if it does not hurt his/her health. Corroborating these findings, the majority (71% and 91%) of coaches involved in aquatics (synchronised swimming and swimming, respectively) reported that they would not suggest doping to their athletes (Mandic et al., 2013, Saijber et al., 2013). Using a Spanish version of the Performance Enhancement Attitude Scale (PEAS), Morente-Sanchez and Zabala (2015) also found that football coaches held anti-doping attitudes ($M_{\text{score}}=31.91\pm 11.42$). Recent qualitative evidence aligns with these quantitative findings, showing that UK-based performance development coaches in rugby league and football (Patterson, 2014) and Scottish performance coaches (N=23) working at national and international levels demonstrated strong anti-doping frames (Allen et al., 2017).

Going beyond these insights, Kirby (2011) compared anti-doping attitudes across levels of competition. She found that coaches working at lower levels of competition had significantly more lenient attitudes towards doping than coaches working at international levels. In addition, she discovered that number of years of coaching experience also had an impact on attitudes, whereby more experienced coaches had less lenient attitudes. Thus, high performance coaches (the focus of the current project) appear to be most likely to express anti-doping attitudes.

Although the emerging evidence might accurately represent the general coach attitude towards doping in sport, we must acknowledge that the findings could be influenced

by socially desirable responding amongst this stakeholder group. One might argue that reputationally coaches have more to lose by conveying a counter-narrative to the doping is cheating heuristic. Additionally, some findings question the legitimacy of this position. For instance, revisiting the statistics in the previous paragraph, a percentage of coaches were found to not align with the expressed anti-doping norm. To illustrate, if 64% disagreed that sportspeople can use drugs to enhance performance if it does not hurt his/her health, there are potentially 36% who agreed (or highly agreed) that sportspeople can use drugs to enhance performance if it does not hurt their health (Fung & Yuan, 2006). Additionally, Mandic et al. (2013) found that 11% of coaches would suggest doping to their athletes if they were convinced it would help their athlete and have no negative health implications.

While these potential incongruities to the current evidence base warrant consideration, if the findings are an accurate reflection of the prevailing social norm, then we need to ensure we capitalise on coaches' established anti-doping attitudes and provide them with opportunities to develop the ability and motivation to promote clean sport and confront any protagonists that promote doping in sport.

3.1.4 Coaches' anti-doping attitudes do not always translate into anti-doping behaviours

It seems sensible to suggest that coaches with anti-doping attitudes might be more likely to undertake an anti-doping role or fulfil their policy-prescribed anti-doping responsibilities. However, it is unclear how coaches' attitudes translate into behaviours because very few studies have investigated actual behaviours. Kirby et al. (2011) focussed on coach intentions and found that coaches intended to provide anti-doping information to their sportspeople. Notably, intentions to provide information related to their perceptions of pressure to provide information, in that the more they felt they were pressured, the more likely they were to provide information. In addition, their intentions to provide information to sportspeople were related to their beliefs regarding the efficacy of anti-doping programmes in deterring sportspeople from doping; they were more likely to provide information if they believed it would be efficacious. In this vein, Engelberg and Moston (2016) found that coaches do not have confidence in the anti-doping system, stating that some sporting bodies are not genuine in their efforts to

prevent doping. Finally, Kirby (2011) found that coaches' intentions to provide information were affected by their perceptions of doping as a problem in elite sport, where the greater a problem they believed doping was in their discipline, the more likely they were to provide information. This is particularly important, as several other studies (e.g., Mandic et al., 2013, Morente-Sanchez & Zabala, 2015, Patterson, 2014, Moston, Engleberg & Skinner, 2015, Engelberg & Moston, 2016, Allen et al., 2017) have shown that coaches accept doping to be a serious problem in sport but typically perceive it to be worse elsewhere (i.e., other sports, countries, or in the past).

Ultimately, each of these influencing factors might be given consideration when designing anti-doping education programmes for coaches to ensure that coaches are encouraged to form intentions to act, which, in turn, might translate into action for many coaches. Importantly, Laure and colleagues (2001) commented that few coaches translate their anti-doping opinions into 'concrete action', so 'even though a small proportion of coaches take an anti-doping stance, the majority remain silent about doping' (p. 135). Specifically, they discovered that only 10% of coaches had organised a 'doping prevention action' in the last twelve months, which they felt was low considering the large proportion of the coaches who felt that anti-doping efforts are necessary (97%) and that coaches have a role to play in preventing doping (98%) (Laure, Thouvenin & Lecerf, 2001).

3.1.5 Coaches lack confidence and, sometimes, knowledge

Laure, Thouvenin and Lecerf (2001) attributed the low amount of anti-doping 'actions' to coaches feeling ill-prepared. Patterson (2014) and Engelberg and Moston (2016) also reported a lack of confidence among coaches accompanied by feelings of being 'ill-equipped'. Indeed, Kirby (2011) found that coaches reported a lack of confidence in their ability to carry out anti-doping actions and influence athletes' doping-related attitudes. Connor et al. (2012) supported this notion in their reports that despite acknowledging their role in the prevention of doping, not all coaches believe that they are currently equipped for this. Notably, when investigating a specific element of coaches' confidence - doping confrontation efficacy (DCE)¹ - Sullivan et al. (2015) found that task-involving coaches are more likely to have higher DCE.

¹ The confidence to initiate an 'interactional episode/active discussion'.

Coaches' lack of confidence may be connected to their perceived lack of knowledge. For example, Kirby (2011) found that 64% were not confident in their own knowledge of the area. Likewise, 41% of sailing coaches felt their knowledge of doping-related topics was 'average' and 38.2% felt it was 'poor' (Rodek et al., 2012). Yet, it is possible that coaches underestimate their knowledge in their self-reports, as Fung and Yuan (2006) discovered that the average score for coaches' perceived knowledge was 23.7 when coaches' actual knowledge score was 66.1. Regardless of this misalignment among some coaches, other coaches do have low levels of knowledge when knowledge is gauged using percentage/proportion of correct answers to doping-related questions. Fjeldheim (1992) found that a quarter of sports instructors/leaders were unable to name any type of doping method. In this vein, only 6% of football coaches reported having knowledge of the Prohibited List (with overall knowledge scores of coaches at 36%; Morente-Sanchez & Zabala, 2015). Similarly, Bhagirathi (2009) reported that only 54% of coaches were aware of the Prohibited List; they also found that many coaches were unaware of Therapeutic Use Exemptions (53%) and testing methods employed by WADA (41%). Interestingly, Mandic et al. (2013) discovered that knowledge was greater among more experienced coaches.

In sum, if coaches are not confident in their knowledge or their ability to influence sportspeople, they might be unlikely to undertake an anti-doping role. Therefore, this matter requires attention when designing and delivering opportunities for coaches to develop knowledge and skills to undertake anti-doping responsibilities.

3.2 Anti-doping education for coaches

3.2.1 Coaches experiences of anti-doping education are mixed

Evidence suggests that coaches' levels of knowledge, and their perceptions of their levels of knowledge, might be linked to their educational experiences. Fjeldheim (1992) reported that only 46% of participants had received information (in this case on doping consequences) in the last six months. Similarly, Patterson (2014) found that almost one in four coaches ($n=64/280$, 22.9%) had never been educated or explored the area of anti-doping voluntarily. Mandic et al. (2013) also found that low proportions of coaches (21%) had engaged in formal education in relation to doping/anti-doping and

that two thirds of coaches declared self-education as their primary source of information about doping and nutrition. Swim coaches in Saijber et al. (2013) corroborated this reliance on self-directed learning (41%), but contradicted the lack of engagement with formal education (as 50% of coaches had experienced this). A similar pattern emerged among UK-based coaches (Patterson, 2014) as self-directed learning (e.g., searching the internet and reading books, newspapers and journals) was stated the most often ($n=123/280$, 43.9%), but a very similar percentage (38.6%, $n=108/280$) had engaged with anti-doping education within certifications, qualifications, degree courses, conferences, workshops and seminars². Notably, this body of evidence points to the variability of anti-doping provision across sports and countries.

In addition to considering whether coaches have engaged with education programmes or not, it is important to pay attention to coaches' satisfaction with these experiences. In this regard, Peters et al. (2009) showed that 62% of coaches felt that insufficient information about doping is available and 66% of coaches wanted 'better information' to be provided. Similarly, Vankhadlo and Planida (2013) reported that 63% of coaches felt the need to develop their anti-doping knowledge and 51% believed that they required more anti-doping education for their work. Laure, Thouvenin and Lecerf (2001) also found that 80% of coaches felt 'badly trained' and 74% believed they required further education and support from relevant sporting and/or anti-doping organisations. Supporting the call for increased education opportunities among coaches, UK-based coaches were 'a little' ($n=68/263$, 25.6%), 'fairly' ($n=97$, 36.9%) or 'very' ($n=88$, 33.5%) keen to learn more about anti-doping topics in the future (Patterson, 2014).

Taken together, research regarding coaches' knowledge and perceptions of education raise questions about the sufficiency of the current provision of programmes for coaches. This provides a rationale for the current project, which aims to inform the development and implementation of anti-doping education programmes for coaches at a global level, within high performance centres. Beyond this project, research should explore the needs of coaches, as well as the impact of anti-doping education for

² It should be noted that coaches were able to select more than one option.

coaches on their willingness and ability to undertake an anti-doping role and responsibilities.

3.2.2 Anti-doping policy identifies coaches as a target population for anti-doping education and outlines indicative content

In 2009, WADA deemed their education programme central to fostering a lasting anti-doping culture in elite sports (cited in Bloodworth & McNamee, 2010) and, as highlighted earlier, coaches have been identified as a target population for anti-doping education in the WADC. The first WADC (WADA, 2003) stated that education must cover substances and methods on the Prohibited List, the health consequences of doping, doping control procedures, and athletes' rights and responsibilities. The International Convention against Doping in Sport (UNESCO, 2005) added the potential risks posed by the use of nutritional supplements and the harm of doping to the ethical values of sport. The WADC 2009 (WADA, 2009) extended athletes' rights and responsibilities to cover ASP rights and responsibilities, and sanctions and social consequences were integrated into the health consequences of doping. Two new areas covering ADRVs and Therapeutic Use Exemptions (TUEs) were also added (WADA, 2009). Finally, the most recent WADC (WADA, 2015) that became effective in January 2015 added 'Applicable whereabouts information'³. In theory, from a policy perspective, all of the listed topics should be addressed by the content of all anti-doping education programmes, including those for coaches.

Importantly, the WADC 2015 (p. 96) called for a distinction to be made between information and education programmes:

Information programs should focus on providing basic information to Athletes as described in Article 18.2. Education programs should focus on prevention. Prevention programs should be values-based and directed towards Athletes and Athlete Support Personnel with a particular focus on young people through implementation in school curricula.

³ It is assumed that the prefix of 'applicable' is present because the submission of 'Whereabouts' is only relevant to those individuals who are in the Registered Testing Pool (RTP) for their sport, or individuals who are working with sportspeople in the RTP.

The significance of coaches not only to supporting compliance with rules and regulations, but most importantly on values-based doping prevention is therefore clearly signalled in the WADC 2015, and this should be considered in anti-doping education programmes provided to coaches.

3.2.3 Global anti-doping education programmes for coaches are available, but evaluation is rare

At a global level, WADA launched the Coach's Tool Kit in 2007. The purpose of the tool kit was to 'assist stakeholders in the facilitation of a face-to-face [anti-doping education] workshop for coaches' (WADA, 2007, p. 24). According to WADA, the intended outcome was to encourage coaches to consider their own decision-making process. They proposed doing this by increasing their awareness and knowledge of their roles and responsibilities with respect to doping-free sport and applicable regulations, as well as how these issues are relevant to their daily interaction with sportspeople. The tool kit utilised 'the interactive delivery of information to coaches' through short presentations and case studies, as well as 'ethical dilemma' scenarios and problem-solving activities (WADA, 2007, p. 24).

In June 2010, WADA launched the computer-based CoachTrue anti-doping education programmes that they suggested were an evolution of the tool kit – CoachTrue Elite and CoachTrue Recreational (WADA, 2010a). Like the tool kit, the programmes were intended to assist stakeholders (e.g., anti-doping organisations, coaching associations and universities) in providing anti-doping education to coaches (WADA, 2010a). WADA proposed that online programmes could better cater for the various learning styles and demanding schedules of coaches than the tool kit (WADA, 2010b). Both programmes are available at no cost via the WADA website.

Unlike the tool kit, the two programmes were designed to distinguish between coaching populations; CoachTrue Recreational's target population was coaches of children, students, or community members and CoachTrue Elite's target population was coaches of elite sportspeople (defined as individuals within their Registered Testing Pool (RTP) for their sport). Similar to the content of the tool kit (short presentations, case studies and scenario based problem-solving activities), the content within the

CoachTrue online modules is delivered through a series of tutorials/slide shows and scenario based question and answer exercises, referred to as 'coaching sessions'. However, the scenarios do not cover some of the same 'ethical dilemmas' that were included in the original tool kit, such as being suspicious that a fellow ASP member is encouraging doping. Instead, the scenarios are primarily related to compliance-based situations. In fact, the CoachTrue Elite programme is heavily compliance-based as it consists of six modules covering Health Consequences, Accountability, Results Management, Therapeutic Use Exemptions (TUEs), Whereabouts, and Decision Making. CoachTrue Recreational consists of the Health Consequences and Decision Making modules only. Justification for designing the programmes with this content or the two coaching population classifications is not obvious.

Whilst WADA has developed anti-doping education programmes for coaches such as the Coach's Tool Kit and CoachTrue, there is no information relating to the effectiveness of these resources in the public domain. In December 2013, WADA announced that they were allocating funding to a project investigating the development, implementation and evaluation of a programme for doping prevention with Ice Hockey coaches in Canada (Goulet, 2013). However, the findings of this study have not yet been published on the WADA website. In general, systematic evaluations of other anti-doping education programmes more broadly appear scarce (Backhouse et al., 2007, Backhouse, McKenna & Patterson, 2009, Backhouse et al., 2016). Consequently, the research field surrounding anti-doping education is in its infancy and remains limited in terms of both span and scale (Backhouse et al., 2007, Backhouse, McKenna & Patterson, 2009, Backhouse et al., 2016). For these reasons, research that enhances our understanding of the mechanisms likely to be appropriate in providing anti-doping education is warranted. In particular, Mottram, Chester and Gibson (2008) stressed the need to address the education of ASP, including coaches. However, very little is known about what is currently being provided to coaches, and why.

3.2.4 Further research into the development and evaluation of anti-doping education is needed

In the face of limited resources, including finances, systematic programme planning and evaluation is crucial, as it helps organisations to target resources to programmes that are effective and cease providing support to programmes that are not (Chen, Cato & Rainford, 1999). Thus, there is a need for research investigating current provision and future potential in this domain to better understand what works, for whom, in what circumstances, and why with regard to anti-doping education for coaches. In particular, there is a need to establish if existing programmes provide content in line with the WADA (WADC) directives. Additionally, Backhouse, McKenna and Patterson (2009) emphasised that the needs of the target audience must be considered in the design and implementation of prevention programmes. Indeed, an understanding of the social worlds of coaches is necessary to support coaches effectively (Jones, Armour & Potrac, 2002). Yet, research regarding the coaching process, including the nuances, actions and behaviours of coaches, is limited (Mallet & Lara-Bercial, 2016, Lara-Bercial & Mallett, 2016). Moreover, little is known about coaches' experiences and opinions in relation to anti-doping education specifically. It is important to consider how coaches learn, as well as where anti-doping education sits in relation to broader coach education programmes. In this vein, Gowan (1991) commented that anti-doping education for coaches does not exist in isolation, so it is important to understand the educational framework and environment in which they operate/are situated. With this in mind, in addition to considering the landscape of existing anti-doping education for coaches, key findings from general coach education research will be taken into account.

3.3 Coach education and development

Coaches are a fundamental pillar of the sport delivery system. Their education is therefore crucial for sport to be a positive experience and benefit individuals and society alike (European Commission, 2014). International organisations like the International Council for Coaching Excellence (ICCE) and the Association of Summer Olympic International Federations (ASOIF) have spearheaded global initiatives to support and develop coaching. The publication of the International Sport Coaching Framework v1.2 (ISCF; ICCE, ASOIF & LBU, 2013) has signalled a step-change in the

way coach education is thought of and conducted. National and international federations, national coaching agencies and government departments have started to use the guidance contained in the ISCF to review and further develop their coaching systems. Policy and funding bodies view the ISCF as a reference point in coach education⁴.

Alongside these policy developments, a substantial body of evidence has emerged over the last 20 years pointing to five key features that constitute effective coach education:

1. *Coach education is a lifelong development process*: although traditionally coach education has been conceived as episodic (Vargas-Tonsing, 2007), research into the developmental pathways of coaches has shown that coaches continue to learn beyond the consecution of their national federation qualifications (Lara-Bercial & Mallett, 2016). For this reason, organisations now refer to coach education and development (CED) as the provision of both episodic and continuous learning opportunities for coaches.
2. *Coaches can learn from different learning opportunities*: in relation to the point above, various studies have shown how coaches can learn from a range of opportunities. Traditionally, these have been categorised as formal (i.e., accredited coaching qualifications, university degrees), non-formal (i.e., coaching clinics, workshops, mentoring), and informal (i.e., own coaching practice, casual conversations with other coaches, personal reflection). Several studies have shown how coaches value all these different learning opportunities differently at different stages of their careers.
 - Coaches value formal education as an opportunity for learning the basics of a sport and of how to coach, a springboard for future learning in the field (Cushion et al., 2010; Erickson et al., 2008; Mallett & Lara-Bercial, 2016). It helps coaches make sense of their practice particularly in their early stages of development.
 - Research has also shown the value coaches attach to learning and development that happens in non-formal settings, especially

⁴ For instance, Olympic Solidarity and the European Commission

as a 'check and challenge' of current practice (Bloom et al., 1998; Cushion et al., 2010; Gilbert, Côté & Mallet, 2006; Lara-Bercial & Mallett, 2016; Mallett & Lara-Bercial, 2016).

- Finally, informal opportunities have been highlighted as central to the development of coaches due to their high accessibility and direct embeddedness in coaching practice (Gilbert, Côté & Mallet, 2006; Jones, Armour & Potrac, 2003; Mallett & Lara-Bercial, 2016; Trudel, Culver & Werthner, 2013; Werthner & Trudel, 2006).

3. *Learning happens within the coach and is done by the coach, not to the coach:*

current CED favours a constructivist view of learning which revolves around the principles of disjuncture (Jarvis, 2006) and cognitive dissonance (Moon, 2004), and the processes of assimilation and accommodation (Moon, 2004).

Consequently, good CED principles include:

- Knowledge to be acquired, both practical and theoretical, must be relevant to the functions the coach must fulfil in their working environment.
- The assimilation and accommodation of new knowledge must be facilitated through references to existing knowledge and to the practical environment in which the coach will apply it.
- Opportunities to reflect on what the new knowledge means to the coach and on completed attempts to apply it must be deliberately provided.
- Application of new knowledge by the coaches must be understood as part of the functions the coaches should fulfil in their day-to-day activities, not as a chore or traditional coursework.
- Support for the learning coach must be readily available on a regular basis.

4. *A suitably trained Coach Developer (CD) workforce is required to maximise*

learning: the ISCF proposes that effective coach education entails more than an exchange of information from CD to coach. Thus, it proposes that CDs must

not only be experts in the topic in question, but experts in learning. CDs must be carefully selected and trained⁵.

5. *Coach education must be accessible*: the coaching workforce contains a mix of full-time, part-time and volunteer coaches who, in the main, have limited time and resource available for their own development. CED organisations must create opportunities that are economically affordable and in different formats which facilitate coach engagement (i.e. face-to-face, e-learning, work-based experience, etc).

In sum, coaches play a fundamental role in modern society. Their education and development are paramount to the successful delivery of sport. The principles described in the above section must be considered and integrated into any CED programme to guarantee its effectiveness, including those related to doping/anti-doping.

⁵ For more information on Coach Developer please see the International Coach Developer Framework (ICCE, ASOIF & LBU, 2013).

4. International Survey of High Performance Centres

Utilising the existing working relationship and memorandum of understanding between WADA and the Association of Sport Performance Centres (ASPC), an online survey was conducted to identify current provision and key issues in relation to the implementation of anti-doping education for coaches and broader coach development in High Performance Centres (HPCs).

4.1 Methods

4.1.2 Participants

At the outset of the project, the ASPC website featured 96 members (i.e., High Performance Centres). From these, the ASPC recommended seven centres to take part in the pilot phase of the survey. Of those centres, five gave consent and completed the survey document (71% response rate). Upon approval of the full-scale survey from the Board of the ASPC, an introduction to the research team was circulated to HPCs by the ASPC and this was followed by an invitation to participate by the research team. Multiple follow-up emails were sent over a period of months, including personalised emails to specific centres/individuals. In total, email addresses were provided by the APSC or located on their website in relation to 64 (of the possible 96) HPCs (67%).

Surveys were completed by individuals representing 22 HPCs (34% of the possible 64 for whom contact details had been identified). Respondents were working in a variety of roles, primarily related to the management/direction of the HPC in general or coaching/coach development specifically (see Table 1 for a full list of roles). Notably, no individual had a dedicated anti-doping role - nor did anti-doping feature within many/any of the HPC staff responsibilities when these were provided. Additionally, many individuals completed the survey alone. Taken together, this might impact the accuracy and completeness of the responses.

Table 1. Participant roles

General management	Coach specific roles	Other
Coordinator	Coach Education Manager	Head of Science, Medical and Technology Unit
Head/Director of Centre (3, 1*)	Director of Coaching	Performance Health Senior Advisor
High Performance Director (2*)	Director, Coach and Practitioners' Training	Lead Physiotherapist*
Director, High Performance Management	Director of Coach Development	
High Performance Manager	Director of Coach Education (2)	
High Performance Officer	Director, Coaching Services	
Manager [of] Sport Programs	Head of Sports Coaching Education	
Manager*	Lead, Coach Development	
Assistant Director (& Sport Scientist)	Project Manager of Higher State Diploma (Education of high level coach)	
	Manager, High Performance Coaching	
Deputy Director, responsible for Coaching and Performance Management		

*Assisted in completion

4.1.2 Survey measure (Appendix A)

Informed by the review of literature and previous research with sporting and anti-doping organisations (Patterson, Backhouse and Duffy, 2016), the survey consisted of 24 questions, including demographics. Due to the exploratory nature of the study, both open and closed questions (e.g., yes/no answers) were used. Table 2 presents a list of questions and shows that stakeholders were asked to report information under four

themes covering: 1) demographics; 2) coach education and services generally; 3) anti-doping education for coaches specifically; and 4) potential to develop the anti-doping education provision in the future.

Table 2. Main themes addressed in the online survey

About you and your organisation

- Name of centre
- Geographical location of centre
- Current role of primary responder
- Current role of other individuals who contributed to survey completion

Existing services for coaches

- Does the centre currently provide education and development opportunities for coaches?
- Does coach education and development feature in the centre strategic plan?
- Is the coach education and development provision evaluated?
- Is the centre given guidelines to inform coach education and development?
- Does the centre have future plans for the provision of coach education?
- Who is in the best position to deliver coach education to high performance coaches?

Anti-doping education for coaches

- Does the centre provide anti-doping education to coaches?

If no...

- What are the reasons that anti-doping education for coaches is not being provided?
- If you were to introduce anti-doping education for coaches, what topics would be covered?
- If you were to introduce anti-doping education for coaches, how would it delivered?

If yes...

- What topics are covered?
- How is it delivered (methods/means)?
- Who is it delivered by?
- Is the centre given guidelines to inform anti-doping education for coaches?
- Is the anti-doping education provided to coaches evaluated?
- Does the provision offer an example of best practice?

Future focus

- Is it feasible to integrate anti-doping education into coach education?
 - What are the barriers/challenges to providing anti-doping education to coaches?
 - Does your centre have any future plans regarding your provision of anti-doping education for coaches?
 - Who is in the best position to deliver anti-doping education to coaches?
-

4.1.3 Data analysis

Due to the type of data collected, analysis comprised of descriptive statistics in the first instance, primarily frequencies/percentages. Qualitative data from open-ended questions were analysed using inductive thematic analysis (Braun & Clarke, 2006).

4.2 Survey Findings

4.2.1 Coach education

Almost all HPCs (19 out of the 21 centres whom responded to this question, 90%⁶) provide some type of coach education and/or development opportunities. Current practice was varied according to the individual HPC. However, a common thread across a number of centres (n=8) was the delivery or facilitation (i.e., hosting) of workshops, seminars, conferences, with some (n=3) also reporting that they convene forums to enable ‘cross pollination of coaching expertise amongst different sporting codes’ and ‘sharing of best practice in coaching and sport science’. Only three centres listed the topics covered within such opportunities, which are shown in Table 3.

Table 3. Topics covered in coach education and development opportunities.

Centre A	Centre B	Centre C
‘Mental health, first aid training, data management training (related to the use of a national electronic record keeping database), and presentations of research outcomes from studies undertaken as joint ventures between [HPC] and various universities’	<ul style="list-style-type: none"> -Develop personal and professional skills, -Refine and enrich their field practices, -Acquire a conceptual and methodological rigor in developing the training project, -Contextualization and understanding of work situations that coaches are confronted in their daily practice, -Using knowledge to solve professional problems, -Participate in the development of the sports policy, -Coordinating a coaches’ team, -Mastering communication techniques’ 	‘Challenging them on interesting developments in sport and sport sciences...sharing of best practice in coaching and sport science, and their development as leaders’

⁶ One centre provided information for questions that related to both not providing and providing education, so all data for this section of the survey has not been included in these findings.

A small number of centres (n=8) played a role in the provision of formal coach certification and qualifications (e.g., '*Advanced Coaching Diploma*', '*Coach Accreditation Programme*') or development schemes (e.g., to become a National team coach within 2 years). Online education was mentioned by only two centres, one as a part of a national coach development scheme (alongside face-to-face sessions) and the other centre mentioned 'webinars' (also alongside other opportunities, including face-to-face sessions). Two centres did not give details of their current provision.

Of the 19 centres currently providing some form of coach education and development opportunities, 12 reported that evaluation of the provision takes place. Several centres advised that this process was overseen by another party, including the national coaching association of their country (n=2), [national] Olympic committee (n=2) or an international federation of a specific sport (n=1); this is often linked to accreditation (whether of the course or the coach). One centre evaluated their provision '*internally, taking into account triangulated feedback from coaches, high performance leaders and staff*'. A number of centres commented that there was no formal evaluation, but that feedback was gathered from coaches through post-workshop/course questions, '*reflections*', and '*informal discussions with key coaches on how they experience them*'. In terms of specific outcomes of interest, one individual explained that '*findings are mostly related to satisfaction and learning perception*'. Five centres did not evaluate their coach education, and two centres currently providing coach education did not respond to this question.

Coach education featured in the strategic plan of 14 HPCs (74%). Across the centres that provided details or documentation regarding their strategic plan, coach education was referred to as '*very important*', '*a critical pillar*' and an '*important mission*'. Although, only two centres were able to state the specific strategic objective related to coach education and development. Further, both centres also provided the supporting documentation to evidence these objectives (and were the only centres to send such documentation to the research team). Interestingly, one of the centres had the provision of coach education, development and accreditation as an objective, whereas the other aimed to 'assist' another organisation in '*building world-leading coaching [and*

high performance] programme leadership'. Coach education did not feature in the strategic plan of five centres (of 19, 26%).

Only two (out of 22) HPCs (9%) reported that they did not provide education and development opportunities for coaches. One HPC explained that this was due to their facility being *'a branch of the [main centre]*, where all education takes place; thus, coach education and development does not feature in the centre's strategic plan and this centre does not plan to introduce coach education and development opportunities in the future. The individual representing the second centre commented that the centre itself was not responsible for coach education and development because *'[national sports organisation] have a comprehensive coach education service and tiered system of CPD, which is managed regionally'*, adding that the centre's role in this provision is to *'act as a host to facilitate'*, as well as *'having an input into strategy'*.

Over half the centres (12/21, 57%) confirmed that they are given guidelines to work from when planning coach education and development. Such guidance appeared to come from national or international sporting organisations (including Olympic committees) (n=9), national coaching associations/frameworks (n=6), international coaching organisations/frameworks (ICCE/ISCF) (n=3), and governments (n=2), sometimes in combination (n=4). With regard to guidance from sporting organisations, one HPC representative commented *'national sporting organisations are now starting to make a more visible stance in this area and starting to provide more guidance and formats of how they wish coach education/development processes to happen'*. Explaining the influence of a combination of different organisations, another HPC representative said:

The Coaching Association of [country] developed the criteria, evidence and theme overview for the [qualification] so for this portion the [coaching association] provides guidelines. For the other professional development opportunities, we undertake various forms of needs analysis, working with the coaches and national sport organisations.

Going forward, eighteen centres (out of 21, 86%) reported having future plans with regard to coaches' education and development at their facility. When details were provided, plans were incredibly varied. At the most general level, some centres hoped

to develop their provision through increasing the 'offer' (n=2) and quality (n=2) of their coach education. Plans included providing more formal education (n=1), developing online coaching courses and seminars (n=1), and '*adding an effective and appropriate repository for blended learning*' (n=1).

Some centres talked about integration, though from very different perspectives. For example, integration included having a '*single integrated coaching system offering a better integrated pathway for coaches from community through to high performance*' (n=1), becoming more integrated with national sports organisations (n=1), and introducing a minimum level of annual CPD a contractual requirement (n=1).

Beyond this, two centres showed interest in 'benchmarking' coach competencies at different levels, answering the question '*what is a quality coach?*' (n=1) and developing '*a more explicit view of the skill sets needed for a 'modern' high performance coach*' (n=1). In this vein, two centres hoped to encourage sharing of best practice, whether at the level of the coach (n=1) or centre (n=1). At the level of the coach, an individual said they hoped to facilitate '*more interaction between coaches to brainstorm and discuss training/testing programs*'. At the level of the centre, another individual said they would collaborate in '*developing shared learning experiences for coaches and coach developers between institutions around the world*'.

Four centres discussed activities directed towards ensuring their coaches (and therefore their coach education provision) stay up-to-date. For example, one centre representative said '*increase awareness of program updates on an "as needed" basis - currently, once a coach is trained, we do not mandate updates*'. Similarly, a centre representative planned to '*expand the services in the centre and other centres to service coaches on demand versus our pre-programmed development courses or seminars*'. Finally, one centre wanted to cover more '*hot topics*' (e.g., anti-doping, gambling, ethics) (n=1) and the other hoped to host more international experts (n=1).

One centre, although reporting they have future plans, stated '*we would like to go on the way we are working*'.

4.2.2 Anti-doping education

Twelve out of 22 HPCs (54%) reported that they provide anti-doping education for coaches, with seven centres (32%) reporting that they do not and three centres (14%) indicating yes and no (either by explicitly stating this or by answering questions from both question logic pathways). One of the latter centres explained that the centre itself does not provide anti-doping education for coaches, but that the country's NADO offices are situated within the centre. In this vein, of the seven centres that reported that they do not provide anti-doping education to coaches, a common reason was that this was provided by other organisations, such as a NADO (n=3), sports federation (n=2) or Olympic Committee (n=2). Other reasons for not providing anti-doping education to coaches were based on not having '*the resources to effectively deliver this*' (n=1), including not having '*enough information to be able to do this yet*' (n=2). Notably, one centre stated that providing anti-doping education for coaches is simply '*not a priority*'. In contrast, another centre commented that '*this is a gap that [they] are currently looking to address*'.

4.2.2.1 Provision curricula and content (e.g., topics covered)

Most centres currently providing anti-doping education for coaches have adopted a curriculum that reflects some elements of current policy and guidance, such as Article 18 of the World Anti-Doping Code (2015) (see Table 4 for details). For instance, two thirds of the centres provided content related to doping control ('testing') protocols/processes (n=8/12, 67%) and rules and regulations (i.e., anti-doping policies, such as WADA Code, and legislation) (n=8, 67%). Continuing the theme of detection-deterrence and compliance-focussed messages, provision sometimes covered whereabouts/ADAMS (n=4), medications (including TUEs) (n=3), supplements (n=2), the Prohibited List (n=3), anti-doping rule violations (n=2), consequences/punishments (n=2), and investigations and intelligence (n=2).

Table 4. Topics covered by current anti-doping education provision.

Topic	Included (n)	Proposed (n)
Doping control	8	3
Rules and regulations (including policy and law)	8	2
Understanding coaches' roles in anti-doping	5	1
Whereabouts/ADAMS	4	1
Ethical/moral principles/values related to doping free sport	4	3
Understanding the role of anti-doping organisations	3	1
Medications (TUEs)	3	1
Supplements	2	2
Prohibited list/banned substances	2	2
Violations and consequences	2	1
Intelligence and investigations	2	

In addition to compliance-driven topics, some centres provided clarification to coaches regarding the anti-doping system. From a practical perspective, this included outlining the role of anti-doping organisations (n=3), and from a more philosophical perspective this included ethical and moral (values) principles behind drug free sport (n=4). Combining the two perspectives, some centres (n=5) provided content focused on coaches developing an understanding of their personal role in doping prevention as a member of athlete entourage. Across the five centres this included developing a code of conduct, discussing how their actions might influence an athlete's behaviour, and acknowledging their responsibility in making ethical decisions and creating a drug-free (and safe), culture, with specific factors such as encouraging athletes to comply with all anti-doping policies and '*sensitising coaches to doping behaviour*' being highlighted.

Beyond the topics listed in Table 4, one centre mentioned providing coaches with up-to-date information, stating they distribute '*latest interesting information on articles*'. Two centres signposted further resources, including '*where to get more information*' and what services are offered by the NADO. In this vein, other centres (n=2) focussed

only on signposting, stating they highlighted the *'availability of programs through WADA and [NADO]*, such as *'WADA certification'*. In addition, two centres offered information on their delivery mechanisms (i.e., online/e-learning modules for coaches to complete).

Interestingly, the focus on two main areas 1) detection-deterrence and 2) ethics/morals also mapped onto the future anti-doping education priorities of the centres that did not currently provide education to coaches (see the proposed column of Table 4). Other suggestions also typically related to other topics already mentioned, such as signposting (n=1) and coaches understanding their roles and responsibilities in doping prevention; for example, one individual said they would cover content that would facilitate *'coaches' understanding [of] the risk factors and looking for signs of athletes/fellow staff who may be at risk and how to deal with it'*. A new topic, that does not currently feature in provision, included *'nutrition and regeneration and how this can improve performance'*.

4.2.2.2 Delivery mechanisms (e.g., how and by whom)

Eight centres (out of 14 who responded to this question, 57%) delivered anti-doping education to coaches through a combination of methods, including face-to-face contact (i.e., workshops, seminars), online modules, and printed or electronic materials. One centre explained they have *'various online learning modules that can be completed by coaches and [centre] staff' which are supported by 'a facilitated discussion by our sport med experts'*, with *'case studies [being] reviewed and discussed in the workshop'*. In contrast, two centres provided only face-to-face opportunities and one centre focussed their attention on online learning. It was unclear how the education of the remaining three centres was delivered from the information provided. The same means of delivery were proposed as future possibilities/preferences by centres who do not currently provide anti-doping education for coaches. Four (out of 8, 50%) would utilise face-to-face delivery methods (e.g., seminars and workshops), two centres (25%) would use a combination of methods, and the approach of the remaining two centres (25%) was unclear from their responses.

Anti-doping education is delivered by an anti-doping organisation (7/14, 50%), centre staff (3/14, 21%), or a combination of the two (4/7, 57%). One centre commented that education is delivered by *'a representative of the [NADO] and the chief medical of the [centre]*. Another respondent described their deliverers as *'special experts/scientists, NADO experts, [and] experts of ethics, partly from other areas like sport ([e.g.,] leaders of economy)'*.

4.2.2.3 Regulation of programmes (e.g., guidance and evaluation)

Ten centres (out of 14 who answered this question, 71%) were given guidelines to work from when planning anti-doping education for coaches and four centres (29%) were not. Guidance typically came from an anti-doping organisation (4/10, 40%) or from a combination of anti-doping and sporting or coaching organisations (4/10, 40%). It was unclear where guidance for one centre came from, and the remaining centre received guidance from another branch of their nation's HPC network. The nature of the guidance given was not often explained in the responses. However, one centre commented that *'the coaching association of [country] and [NADO] provide the guidelines and framework for the training'*.

Nine centres (out of 14, 64%) reported that their anti-doping education programmes for coaches are evaluated, with five centres (36%) stating that they are not. Across the nine centres, there was large variation in the evaluation-related information provided. Based on the available information, it appears that evaluation is approached from different angles in different centres. These approaches range from a post-workshop survey, interactive quizzes, and having coaches *'expose his doping behaviours prevention strategy...in the certification records'*, to simply gauging *'the effectiveness of training'* by having *'sports med expertise...in the room with the coaches'*. Evaluation was sometimes undertaken by/in collaboration with someone outside the centre (4/9, 44%), such as the NADO (n=2) or NOC (n=1). One centre did not provide details (i.e., no response).

Seven centres (out of 14, 50%) felt their anti-doping education programme for coaches offered an example of best practice, with five centres (36%) reporting that their

programme does not, one centre (7%) answering yes and no, and one centre (7%) not responding. The centre answering yes and no explained that:

We believe that there is no good practice. Each training context is singular. We must learn to identify risky behaviours. Responses should be adapted to all contexts. We can give several approaches to problems.

Notably, although they had each specified yes or no, two other centres commented on the difficulty of answering this question. One suggested that the NADO is better positioned to describe best practice examples and the other explained that it is *'hard to say, as you don't know what other people are doing. [We] are certainly trying to do something good'*.

A third of centre representatives (8/22, 36%) felt that it was feasible to integrate anti-doping education into coach education and development processes within their centre in the future, with some individuals noting that additional resources ('money/staff/time') might be necessary for this to happen. For example, one respondent said *'It would be very feasible and encouraged. A small investment in time from the providers would ensure continued delivery'*. Four centres (18%) reported that some form of integration is already in place or in progress. One individual explained *'the awareness of the danger of doping behaviour is an important point in our training sessions. They are and will remain in our programs'*. Additionally, three centres suggested that they would support, or continue to support, efforts to educate coaches in relation to anti-doping in some way (even if this was not specifically through the integration of anti-doping into coach education):

This should be covered by the [NOC] and [NADO], but we would discuss anti-doping further in small in-house workshops. We work closely with a pharmacist...we can arrange educational seminars with him regarding optimal supplementation for performance.

Our centre is not responsible for the coaches, but ethically, within our assessment through service, information is part of this education.

Six centres (out of 22, 27%) did not provide a response, or provided information that was unrelated to the feasibility of integration.

The consensus across the centres seemed to indicate that anti-doping education must be facilitated through collaboration, with 50% (11/22) of respondents suggesting that responsibility should be shared between sporting/coaching and anti-doping organisations. One individual said *'[NADO] in partnership with the [coaching association] should develop the materials and train the facilitators, much like other coach development we need to get this as close to the daily training environment as possible'*. Another respondent said *'[NADO] should lead, but will get more traction if the [NOC] is helping. A joint effort is best'*. Six individuals (27%) reported that NADO's alone should be responsible, and three (14%) individuals felt that sporting organisations alone should be responsible.

4.2.2.4 Challenges to providing programmes

The centres reported numerous challenges/barriers in designing or delivering anti-doping education for coaches. For five centres, barriers related primarily to resources such as time and money, with one individual commenting *'we have very limited financial resources, which affects our ability to invest in this in a significant manner in either staff or materials'*. They went on to add that *'for coaches, time is a factor - given they are already significantly stretched in delivering the hands on performance support to athletes'*. Indeed, three centres thought that coaches having limited time was a challenge. One centre commented on the impact that this can have on coaches' engagement with learning opportunities, *'[the challenges are] availability of coaches and athletes, time for them to take courses or watch information. It needs to be more flexible or seen as beneficial'*.

Building on this, some centres suggested that providing anti-doping education is a challenge due to the fact that coaches are not their official responsibility or the fact that education provided by their centre is not compulsory for coaches:

Coaches are not our centre's personnel. Coaches are federation's personnel.

This is not required for all coaches to participate in the integrated training program...that is offered and for many sports, it may be volunteer assistant coaches.

A final challenge mentioned by two centres related to knowledge, with one centre simply lacking this (*'No barriers just an understanding of other drugs and practices in our country [is needed]'*) and the other commenting on the changing nature of anti-doping (i.e., difficult to stay up-to-date with developments).

In responding to these challenges, the need for efforts to be collaborative working was emphasised – primarily between HPCs and sporting and anti-doping organisations. One centre representative said *'this could only be done in collaboration with the national sporting organisation and would require consultation with [NADO]'*. Moreover, several centres reported feelings of a lack of collaboration, coordination, or commitment within and between organisations as a barrier. For example, one respondent suggested *'a big challenge is the real international cooperation in the fight against doping'* and another added *'the main one [challenge] would be getting anti-doping into operational plans'*.

Two centres suggested that there were no major obstacles in designing or delivering anti-doping education for coaches in their centre. Four centres did not respond to this question.

4.2.2.5 Future plans for programmes

Of the ten individuals who responded to the question, half (5/10, 50%) reported having no future plans regarding the development and delivery of anti-doping education for coaches. Across the five centres that did have plans, two explicitly mentioned ensuring that coaches are given an opportunity to learn about anti-doping before a major competition. For example, one respondent said they are *'working to be certain all coaches take this before they go to the Rio Olympics'* and another commented *'every coach going to a major Games has to undertake an anti-doping session as a compulsory requirement'*. In the vein of compulsory activities, another centre stated that their future plan was to *'work with our sport medicine team to offer a series of sessions - blended online and in person - and require that all coaches affiliated with the [centre] have completed this'*. Other individuals talked generally about continuing their current approach or expanding their provision, such as *'including more into existing programs'* and *'better planning of a programme across all levels'*. One

participant said they aimed *'to continue with the initiative...giving regular information, to continue assessing coaches through services, to organise informative workshops with the collaboration of [NADO]'*. One centre intended to expand/develop their current provision by integrating anti-doping into programmes on other topics, specifically nutrition:

Anti-doping has been integrated with messages about recovery - especially nutritional strategies - through a programme called [name]. This is in line with the belief that the coach is a prime influence and messages should come much earlier, about nutrition and supplements...The aim is to have all [national sporting organisations] implementing this/complying with this.

Finally, another centre was keen to *'collaborate with [NADO]. Leverage best practice from other countries...and other agencies...[who are] already doing this well'*.

5. Case Studies

In the next phase of the project, the focus was on creating a compendium of international best practice related to the implementation of anti-doping education for coaches in high performance sport. Therefore, interviews were conducted with representatives from a selection of centres to capture a greater, more in-depth insight into their current practice and future plans.

5.1 Methods

5.1.1 Participants

Informed by the findings of the survey, a purposeful sample of four HPCs were selected for interview. The centres of interest represented a range of perspectives with regard to the stage at which their provision of anti-doping education was currently, from not in existence to under development and fully implemented and established programmes.

5.1.2 Interview details

Interviews were semi-structured and took place via Skype. They lasted between 30 and 60 minutes ($\text{Mean}_{\text{Time}}=45.38$) and were audio recorded. Building from the findings of the international survey, the interview guide (Appendix B) explored what the centre currently provides and why, as well as future plans. As such, questions covered matters such as:

- Topics covered in programmes
- Delivery (how, by whom)
- Reasons for provision (or lack thereof) (e.g., guidelines, drivers, motivation)
- Evaluation of provision (how, by whom, findings)
- Challenges to providing anti-doping education to coaches (with specific questions around motivation, perceived capabilities of the centre, and opportunities to engage coaches)

5.1.3 Data analysis

All recordings were transcribed verbatim and analysed on an individual basis to be presented in this report as a series of case studies. Following this process, the interviews were viewed as a collective and inductive Thematic Analysis (Braun &

Clarke, 2006) enabled common, or contrasting, patterns to be identified across the four centres.

5.2 Findings

The descriptors utilised for each of the four case studies should be seen as representations of the centres, rather than the individuals whom were articulating the centres' positions in the interview.

5.2.1 "Passionate, proactive programmer"

Stakeholder 1 described a well-established provision of anti-doping education for coaches, saying, *'So there is a long-standing basis for this in that our coaching education programme has always included something around anti-doping'*. They explained that anti-doping is embedded in broader coach education processes in their centre, but also in the broader coach development context within their country:

Typically, we target that developmental coach where we can really get in and teach them. And embedded in that programme is a whole module on health and safety. And throughout that health and safety module there is an online (pauses) I'm gonna say e-learning, er, platform that's on the [NADO] website that the coaches have to complete. So, we purchase licenses in order for them to complete that. As well as, the WADA one as well (pauses) the online, er, coach piece there. So they did both of those things as part of our [internal centre-based programme].

Explaining the integration of anti-doping into coach education, the stakeholder noted that education is a key element of the nation's broader anti-doping programme:

I think the last, past few years it's taken a big step forward, the [national] anti-doping programmes. Education is a foundational component of that and so are the [NADO]. When we look at one of their pillars its education as one of the foundational pieces there.

Beyond education, anti-doping efforts in general were described as being a priority for this nation and something that they take great pride in, *'I think [country] has always done a lot in this area and, and we love that we do, do a lot of that in the area'*. When asked if this was something that they felt was influenced by broader cultural/societal norms the stakeholder said:

Every event I was at leading up until Beijing it was mentioned about, clean and ethical, and being good sports citizen or corporate citizens, whatever you want to call it, and maintaining that and not cheating in any way. So, I think that all pushes down the system a bit.

Within their centre, there was a strong sense that there was a shared view and clear cultural beliefs on this topic. The stakeholder commented *'It's just part of trying to reinforce what we believe in and care about'* and explained:

I think it comes from everywhere. I think it needs to come from everywhere. I think top-down is only going to have a limited impact...Like the formal education side, its.. "I'm checking the box, I'm getting it done". But, to become part of the culture it's gotta be not just from the top down, it's gotta be from the bottom up and from the sides and from every direction.

Due to this articulated need to address anti-doping from every angle, including from every person, the centre includes elements of anti-doping in their recruitment strategy. The stakeholder comments:

So, right from advertising the job to that question as part of an interview panel, to our contracts that you sign when you do get your job, so that is the formal side. But, then you get enough people who have had yeah, that ground swell, those little bubbles that people are trying to support a healthy, safe environment. Hopefully that means our environment will then improve onwards.

Providing further detail as to how this is done, they reported *'When you look at a Job ad[vertisement] for [organisation] it says right in there "commitment to.." um, "promoting and supporting a drug free environment in sport". That's not exactly how it's worded, but that's in the job description'*. At the interview stage of the recruitment process the stakeholder describes:

...one we ask all the time is "What happens if you ever saw this?". It's kinda that case study idea and that was something that was started years ago, I remember that from when I was interviewing eight years ago. I think just about everyone has had that question as part of an interview process as well...so it would be a case study that "If you saw something, how...what would you do?" Or, "If you were in a daily training environment and you suspected or saw something, what would you do?" and it's really just to get...doesn't it tell you a tonne when somebody answers a question like that? So, what would they look into, where would they go, how would they proceed, and um (pauses) yeah, I remember

being on many panels, interview panels, where we asked that question and it was very interesting.

This importance being placed on all staff in the centre being supportive of clean sport is corroborated in the centre going beyond educating coaches to reach all personnel:

Not only are our coaches getting an education, but all of our staff are educated as well. So there is an online module that we all have to do as part of understanding what the [national] anti-doping policy was.

Focusing on coaches specifically, anti-doping is integrated with other topics:

Well our health and safety module, um, our health and safety module we do, you know, emergency action planning and um, what risk analysis and part of what risk analysis really is. Urm, doping and anti-doping, urm and what actions is a coach having to think about within that context?

Within this, content might cover practical aspects, such as doping control, where the stakeholder explains *'it's drug testing protocols at major competitions...I think one is where you need to be aware, because tomorrow one of your athletes could be [funded] and subject to random testing'*. Elaborating that they ask coaches to consider *'is there any training camp, do they have the supervision of the athlete when they are being tested, how do they make sure they have the right people around that are aware of the concepts and how they work'*. Beyond this, they also highlighted content related to *'creating that healthy, empowered environment'*, adding:

It's consequences of using banned substances, how to encourage athletes to safeguard their values and take greater responsibilities for their own personal actions. And then we've also got an ethical decision making model that the coaches all have to take as well, it says "making ethical decisions is a requirement at all levels of coaching".

Indeed, the stakeholder consistently emphasised the importance of culture in preventing doping:

It's not just about the testing, but about creating that environment and talking to the athletes and so, what can they take and what can they use...building for that athlete that is moving along that high performance pathway and they truly...that coach wants to be a positive influence on that track, being able to create that

shared vision of what that pathway is gonna look like for the athlete, as well as themselves.

The notion of the coach acknowledging their influence and understanding how this comes to fruition in practice was reiterated on several occasions and this featured as a desired outcome of the centre's anti-doping education programme. The stakeholder stated *'it's that they have to take an active role and are responsible to take that athlete along, in that environment'*. They elaborated:

The health and safety module within the [qualification] [has] criteria such as, take appropriate measures to promote drug free sport, ensure athletes understand, it's like responsibility and comply with all anti-doping policies and procedures in place. So, that's the global criteria, um from our standpoint it's that the coach understands what their role is, what influence and they understand what the potential is and what they have influence over. Because they don't, can't influence absolute everything, but what can they influence and how can they influence it. And their roles, as far as what can you do to create a healthy, safe environment, is inclusive in creating drug free sport culture.

Notably, the stakeholder commented that one of their desired outcomes is to have coaches apply the principles from the education programme into their practice, *'I think we need to look at frequency and look at application, not just knowledge. [It's] not just tell me what you know. Because there are plenty of people that have been involved that know a lot'*. They continue:

...because knowledge doesn't tell us anything, knowledge doesn't tell us...knowledge doesn't tell us what people actually apply so we want to see programmes where we (inaudible) we could, but we don't have the capacity.

To this end, the education programme activities aim to prompt coaches to think about how they would do things to prevent doping in their every-day practice:

I did one presentation and we pushed them to think a lot more holistically than that and how they say, even subtle things people say, things in understanding the responsibility of the athlete for everything that they put into the body and how they...It's very context specific what we might see...it's beyond the physical, doing the test, it's the anxiety that kicks in that, you know you have the athletes that are sitting at their kitchen table today (laughs) had just gone to the bathroom and the random testers had shown up so they hung out with them and got to

know them for a couple of hours and so you know, the stories of trying to make it real. Trying to get the coaches to figure out “how can I relay that to the athlete?”

Part of this process of coaches thinking through what they might do in practice involves discussion and exchange of ideas across individuals, ‘*we try and get a little bit of sharing about coaches who already work in that environment and what they might do in that environment*’.

To establish if these desired outcomes are being achieved (i.e., to monitor coaches anti-doping behaviours) the centre uses a combination of formal (e.g., a portfolio) and informal/non-formal (e.g., conversations, observations) means:

[coaches] produce evidence for the portfolio, it talks about how are they having conversations with their athletes and what types of things are they doing in their day-to-day training environments to support that.

It’s about the application, so we want to hear from coaches directly, “What are you doing?” and each coach has a mentor coach, and that mentor coach also has a (pauses) er, what should I say...a library of questions (laughs) that they try and get into the conversations with those mentees, as well as talking about what they are actually doing here, what can you see. If I as a mentor coach walk into the training environment, how will I see that you are promoting a drug-free environment and they are...What will I see? What will I hear? How will I hear the athletes interacting? We also got high performance advisors who come into daily training environments and those are the types of things I look for in a high performance environment. So we are trying to be, we are trying to hit it from every angle we possibly can (laughs).

Reinforcing the formal element of ensuring anti-doping actions are being taken, the centre/training programme encourages coaches to establish codes of conduct within their environment:

If we can help that side of things like the culture and be supportive of the coaching philosophy and the coaching philosophy supports quality codes of conduct. And we do that as well! So another part of the programme is er, establishing codes of conduct going around your training environment...

In this vein, coaches are expected to adhere to a code of conduct of their own too, operating at the level of the centre, in association with the NADO and national coaching association:

So what we are building to, toward is all coaches that are coaching in any international multi-sport games, that's where we are starting, are, have to have that status [be chartered professional coaches] so they can get it in a number of ways through the same filters, um, the [national coaching association] but with that is the Coaching Code of Conduct and that code of conduct is actually pushed through our [the HPCs] coaching certification programme as well.

Another formal monitoring tool available to centres is their insight into how many coaches they have reached with their programme due to this being integrated into the broader coach education qualification. The stakeholder comments:

I'm gonna say frequency...so, from a [diplomas] standpoint it is fairly easy, they have to have the certificate in their portfolio...in order to be completed, [association] does require coaches to check that box. So, it is now a requirement that annually coaches have to go through the training as well.

The stakeholder reported that the integration of anti-doping education into coach education helps to ensure coaches engage with the programme and have a minimum standard of knowledge:

Some of that mandate, mandating certification, um, and trying to work with their provincial and national sporting organisations just to say those associations have to have a coaching code of ethics that all coaches have to sign and that mandating a certain certification level is not a bad thing, because I mean, now that certain things are happening and there is at least now the knowledge.

Although the integration of anti-doping education into coach education provides this 'guarantee' that coaches have engaged with it, the stakeholder is conscious that their provision is not perceived as a 'box-ticking' exercise. Instead, they are keen to have coaches 'buy-into' and value anti-doping as part of their role (corroborating earlier insights):

You don't want to create an environment where people just have to check boxes. I think there is a genuine interest now, because there is skin in the game, right. There's, it's not something that's said in arms right to the coach, but it's

involving the coaches, and whether you are an assistant coach or a head coach, it's involving you.

The stakeholder described buy-in among coaches as one of the main challenges in providing anti-doping education programmes to this population:

I think from a coaching perspective, I think it's, er relevant really and we find that coaches that are on the pathway, that aren't networking with [funded] athletes, have a harder time, er not buying in, because I think they are interested in understanding what the demands of the high performance athlete...what are the demands, but it's not really buy-in, they aren't moving in that environment so making it real for them is very difficult.

Well, I definitely think there are and one of the key hurdles is (pauses) any kind of coach development or coach workshop, sometimes the coaches are walking past the room (inaudible) the ones that are walking down the hallway that don't engage in the coach development, they are the ones who need it the most and so it's how do we influence those coaches...I think that is one of the biggest hurdles, again, with such a huge country thousands and thousands and thousands of coaches at all different levels. It's making sure you get the right ones. How can we influence all coaches, not just the ones that have totally bought in?

However, they addressed 'buy-in' in a number of ways, including offering different resources/perspectives, encouraging coaches to take responsibility, trying to make connections between things that have happened (i.e., doping incidents) and their environment to 'make it real', and emphasising that doping isn't just about intentional cheating:

So, I think, by having different ways that they are learning the (pauses) realities um, definitely helps. So, they see from the WADA perspective, from the [national] perspective and then when the programming all the way through they're finding what is relevant for the age and stage appropriate athlete.

A little bit of that "you need to know what's going on" and "we need to know" because it's what's going on...your culture isn't just what's going on when you are in the room, your culture is what's going on when you are not in the room. And you are responsible for helping to support that culture and build that culture.

Nobody thinks it's going to happen in their backyard, and I think [they think] that their programmes are immune to any of this stuff happening. Unless they heard or had some knowledge of some of the incidences of where it is supplement taking and allergy medication and drug storage, you pick the one on the right instead of the one on the left and [it] was just a mistake right? Um, so it depends

on, I guess, how in tune they are to the general greater sport system and some of the things that happened that are just...are not with intent to cheat or intent to be bad people or anything like that (laughs). Or even to put them forward it was something as simple as a cold medication or allergy medication, that has that added stuff to it instead of the one that didn't have it. Um, so that's what we need to try and do as far as make sure we understand that it can be that easy [to inadvertently dope].

In terms of delivery, the stakeholder described a combination of methods being used to reach coaches:

I think there has to be formal and informal opportunities, so I think that...If I look at the [centre] as a learning environment um, well we have formal learning sessions like coach development sessions or whatever, there is so much organic mentoring that goes on. So we need to be able to do both and so I think it's...formally you can go the nuts and bolts of [NADO] and WADA and creating a code of conduct, doing case studies and all that fun stuff, but I think that in itself is good, but I think to take it another level is making sure that the integrated support teams that are working with various sports, high performance sport, are promoting and supporting and reinforcing a lot of those hidden messages, because you know you have to say something seven times to somebody until they actually absorb it (laughs).

We held a seminar last year on just er and we are just gonna try and do it at the start of each year to talk about updates to the system um and what changes are being made. So some will be larger than others or be it as a webinar and er, post it. Ideally we can do it as a webinar, but we can post on our website so we can...anyone can do it. Whether it's a podcast or webinar, whatever.

They had to do all these webinars and a couple of voiceover presentations in a realistic environment and then tonight, I mean this afternoon and tomorrow night, we have two cohorts in the [qualification]...we have a physiotherapist coming in who is also our [NADO] trainer and we're doing some cases studies and having a conversation, er and a virtual conversation with the coaches, to get a feeling for the understanding and application.

Notably, the centre is keen to reach coaches at every stage of their development:

It's not once you are high performance, it's, you have to have different sets of eyes already in high performance, but I think we have to impact coaches when they are figuring out who they are and where they are going?...I think really, what I think is foundational for all of this is embedding relevant information about creating anti...for a safe and drug free environment, and that includes responsibility for alcohol and you name it right, by pushing it down a little bit further along the pathway so it doesn't become a new thing that we are only telling coaches about once they are high performance, but starting to lay the

breadcrumbs further down so they are having this...They have got their codes of conduct that they are pushing down whether they are coaching 14 year old kids or...starting to try to influence an environment for a group of kids who will never ever be high performance right, and I think that's what we want.

When asked what helps make the programme work well, the stakeholder commented:

I think it's the formal, the informal, having the codes of conduct, having a lead agency that is responsible for the coaching education, but having strong synergies with all the organisations around them...It's how do we build that culture and that's always something I'm fascinated in and even more, how to build that high performance culture inclusive of all of those healthy components...but I do know that we try really hard in [country] to talk about..[is] using sport for good and it's not about the level it's about the process and excellence and striving towards excellence and...well...like I say "no, if you, you want to get on top of the podium, the process...". That's what's good, that we have had to open up those conversations again. What are we willing to do to get on top of the podium? Well we are not going to cheat so, it's being able to open up those conversations a little bit more.

Speaking specifically about the need for collaboration, they explained:

I think, keeper of the organisation (laughs) is [the national coaching association] um with a lot of synergies from the national [sporting] parties and then I think really it's all of us as key stakeholders that enhance that...So there is a responsible coaching movement, there is a [sporting organisation funded by the government] as an extra or a partner, there is a [NADO], um and then of course there are international organisations that they also have synergies with, so I think from a global education standpoint they are key for the education, the delivery agents. It doesn't mean that delivery agents or institutes or anybody else can't reinforce and enhance the learning, but as far as core they will be responsible.

Finally, although they had a well-established provision, they felt that they would continue to develop this in the future:

I always think we can do more. I definitely think we can do more...I think there are lots of things you can proactively try and do a little more of...I feel that we do a lot, but I don't know, you're never gonna get a hundred percent of the coaches and get buy-in by a hundred percent of the coaches. But how many can we influence and are we influencing the way it runs? That actually, is actually creating that culture where we want to see it as a progressive, long, high performance pathway. Yeah, we are never going to be a hundred percent, and we recognise that, but we definitely strive.

5.2.2 “Committed yet casual contributor”

This stakeholder reported and appeared enthusiastic about their responsibility to provide anti-doping education to coaches, saying:

It's a proposal that we cannot avoid, and that we don't want to avoid. Firstly, we want the athletes and the coaches to be up to date...We are more than interested in providing this training...In fact, we are already doing it.

In terms of motivation for providing anti-doping education, whether for coaches or athletes, they explained that it aligns with their overarching aims as a centre:

We have three main objectives: one is to provide a number of facilities and services, so athletes and coaches can enjoy the best training conditions; the second objective (and not for being the second makes it less important) is the comprehensive training of the athlete, which now it's called the dual career: the athlete must receive the necessary academic, social, and personal training in the centre so when the relationship finishes, whether that is in one year or in 20 years (as it could be the case for some), the athlete will have experienced a personal growth so when they leave the world of sports they can live as normal in society with no problems. Therefore, this objective is as important as the first one. The third objective is to generate knowledge; as 90% of the funding is public, this knowledge must be given back to society. This is mainly to the technical society related to sports, but also, given the characteristics of sports, we also disseminate what we do [beyond this]...We don't specifically have the formal obligation of providing anti-doping education or training, but we have ethics; considering our two first objectives, anti-doping training is simply part of the comprehensive training.

Consequently, anti-doping education is embedded in a ‘comprehensive’, ‘inter-disciplinary’ programme, rather than as a standalone programme:

Our obligation as a training centre is to provide education about good uses of sport practice, and one of the good uses, apart from fair play or sports hygiene, is the anti-doping fight.

We have a work model that we like to implement in all sport groups in [the centre]. This work model requires some effort, because it means a lot more proximity than with a direct implementation. It's required that it's implemented with dynamism, and in an interdisciplinary way. The main objective is to create knowledge between sciences; not from their own perspective, but between sciences. These meetings with the majority of the groups in [the centre] are held

regularly, and this way it's a lot easier for coaches to access information; obviously, within this information there is the anti-doping fight.

With regard to the 'dynamism' described by the stakeholder, they commented that their provision of anti-doping education to coaches is somewhat organic, rather than formal:

What happens is that we don't do it in a formal way...We haven't formalized it but we do provide the education, through our contact with coaches; we are "the services". It's not done in a formalized way, it's done through our work, it's part of our job.

The organic and dynamic approach was corroborated in the stakeholder's reports that the primary means of educating coaches in this area is through typically unplanned interactions between coaches and centre staff. Notably, the success of this approach relies on the relationship between centre staff, and coaches (who are not employees of the centre):

What we do with coaches is to monitor all the different training groups. We have regular meetings with the group working with that coach where the 'director' of the discussion is the coach himself. The coach is interested in collaborating with us. We don't work with all the coaches in the same way: some of them need more monitoring, others don't. So, we always manage our relationship with coaches in a very direct way. They welcome all the information that we provide, and they are interested in receiving it because they are the ones who will implement it in the training...with those who are here day by day, we have a very good relationship.

For example: if we have a test with the swimming group in a week, a lactate test, it's possible that whilst the athletes are doing the series and we are waiting for them to come back, coaches might approach us and ask "by the way, this girl has had a change in her medication", and then we would tell them "ah, well, there are some new bronchodilators and they might not be included, or they might be included, so then we have to control it".

The success of the dynamic and organic approach also relies on the availability of appropriately trained professionals/experts, such as medical practitioners, being resident and accessible in the centre:

They [coaches] have the best way to access this information: through the professionals. Maybe other centres without this possibility will have to resort to online or phone services, but coaches here have the professionals on site, so it's a lot easier and more flexible.

There is a permanent contact, which facilitates communication. You might get some coaches who “hide” a bit more, but even those ones, if they ever have a doubt, they can solve it in no time: a quick visit to their office, a phone call, etc., which is what usually happens. They don’t even have to book a time to go and sit with them, they simply knock on their door and they stay there as long as they need to solve their problems. It is a great advantage that training centres have several professionals. We have three, but it doesn’t mean that the other doctors and physiologists don’t know anything, on the contrary, they are also well-informed...Being there day by day helps us to be very well-informed and up-to-date with everything, but the others also know things.

As we are specialists in sports medicine we know when and where we have to check the updates in the List, and we keep coaches informed day by day.

Based on their positive experiences of experts in residence, they recommended this approach for other centres, *‘If there was a “champion” in each centre it would be more convenient, that way coaches would feel more confident, and they would think about what’s going on. Oh, well, maybe they don’t even think about it anymore’*. However, they also acknowledged that having such an individual as accessible as this could lead to coaches disengaging from anti-doping responsibilities and deferring everything to this person, *‘Maybe we are encouraging them [coaches] not to even think about it, when actually being up-to-date with anything related to the anti-doping fight is part of their job’*. Indeed, adopting an ‘organic’ approach to anti-doping might seem somewhat risky as it might lead to decreased accountability and action. To mitigate against this risk, a clean sport ‘activator’ who can deliberately and pro-actively engage coaches in anti-doping-related interactions could be appointed and provided with additional training (e.g., train the trainer style support).

With regard to engagement with and attitudes towards anti-doping among coaches the stakeholder reported that this was generally positive (and referred back to the importance of their relationship here), *‘They are aware of its importance; they trust us and accept the training that we provide. I don’t see any strange attitude’*. Elaborating, they acknowledged that coaches can be ‘reluctant’ to engage with formal anti-doping education opportunities if they have limited time or if the programme interferes with their schedule:

I guess when there are new regulations they might be reluctant at the beginning because this stops their routine, but they will accept them when they see that they are getting something positive out of it. They are always the ones to establish their own routines, and sometimes we might have some problems regarding facilities.

Last year, when we started to accept all of these proposals to give short courses we didn't have any problems. The only thing is finding a date, that's what I mean, but nobody reacted in a bad way...Just imagine how hard it is to find a time and a day to have a meeting with 8 professionals...It's all about timing, not about attitudes.

Despite the potential for some coaches to show reluctance to engage with opportunities, the stakeholder explained that the centre allowed coaches to make the choice for themselves, rather than the centre imposing education as compulsory:

It shouldn't be [compulsory], and I don't think it is. If we were to organize these trainings ourselves, I'm sure that coaches would accept them with no problem, just as they accept the advice that professionals give them day by day.

Although the provision in this centre was largely informal, the stakeholder articulated their recent decision to change this, '*[To formalise it] that's what we are trying to do now...we already have the means and the contacts, it would be a matter of formalizing it and establishing a program, making some changes, etc. It would be feasible*'. When deliberating how they would deliver this, engagement was given consideration. For instance, the centre staff acknowledged that online training could lead to lower engagement:

I think that online resources are interesting, but I'm not sure if coaches would find it easy. I think you need certain 'obligation', otherwise it will always be difficult to find the time for it, because there are many things to do. Also, coaches have to think about many things: the clothes that they will be needing for the next competition, the diet...So many things, that if you don't have a specific reason to do it, if you don't give them a pack and tell them "you need to dedicate to it this amount of hours"...If we were to say "access this when you have a moment" it would be very difficult because they never have "a moment"...Having that information there it's good because I know where it is located for when I need it. But if it has to be done "whenever I have the time"...I don't know, when I will be able to.

Currently, this centre is working with their NADO on developing a generic training programme for all sports using the centre. As part of this programme, a centralised

curriculum has been proposed. Notwithstanding this, the respondent acknowledged the importance of making programmes as sport-specific as possible in the future:

There is only one syllabus and it's the same for everyone. We still have to go through it, but from what we have read it's more or less the same for all the federations... We are in the process of seeing in what way we can make it as individualized as possible, not for each federation but for related federations... for example, doing sessions on water sports or combat sports in a small committee, let's say around 20 or 30 people at the most, and even less.

With regard to specific topics or issues that might be covered, they identified prohibited substances, doping control, and consequences of doping, as well as rights and responsibilities:

What I have realized is that some coaches are not aware of which drugs are included in the Prohibited List, or drugs that were included but are not there anymore. Also, they don't really know why certain drugs are included in the list. I always tell them that antibiotics, anti-inflammatories and antihistamines are permitted, and some coaches are surprised that some of them are permitted. They are not clear about which drugs are prohibited, when actually what you have to look at is overstimulation and ways of increasing energy performance, which are the two bases of anti-doping. I know all of this from experience, but the more people remember these things the better.

To know what's going on with drugs. Coaches sometimes lose touch with what drugs were prohibited but are now accepted... So yes: the Prohibited List, types of doping and its consequences, the responsibility of the athlete, procedures, locations... [This list is] from [NADO] with the content of the training program. It's very comprehensive.

Coming back to the centre's current approach to anti-doping, which is based around conversations/interactions between centre staff and coaches, doping control and TUEs were mentioned:

There are three of us who are 'officers' and perform anti-doping controls, and because of this proximity we have acquired more involvement. And there is a colleague who is part of the [NADO] committee for TUEs. We all have different positions, and we can see what problems the athlete might have, on one hand on a day-to-day basis, and on the other hand during the controls and with the applications for TUEs. I like to speak to them [coaches] about it: I tell them that there are no prohibited medicines, even though there is a prohibited list. What this means is that in the event of needing medication from the prohibited list, they simply have to communicate this with enough time. This way it's easier:

there is nothing that is prohibited, if you need the medication that's fine, but if you don't need it you can't use it. This is to make them see that it's not as difficult as it looks.

Beyond these topics, the centre had reported that they would like to include ethics in their future programmes. When asked specifically about this in the interview they described the importance of this, but also commented on the difficulty in them influencing this among coaches:

[This] is just like motivation: ethics are within yourself. We cannot instil ethics. We do it every day, but not in a formal way. We can help them in how to apply them. They know us, and they know what they can ask for and what they cannot. They know our style, and it's the one they have to follow. Maybe the topic comes up, because others do it, but they know about our ethics and they know our work style. And that's it, that's our influence, ethically correct.

It's complicated, because coaches have the responsibility of going to the limit, and maybe they don't know where the limit is and you have to put that limit.

Within the complex paradox of coaching ethics and maximising performance, the stakeholder also suggested that anti-doping education for coaches should cover known doping risk factors, such as recovery from injury.

In the end, coaches are always trying to win. So, we know the key moments in which athletes are more susceptible to fall into this. But when there are some extra problems, such as injuries and recoveries where performance must be improved to obtain a scholarship, otherwise things won't be the same...These are risk factors that we should consider.

All treatments have their own timing, recovery processes in different pathologies have their own rhythms. What you try is to make the recovery as fast as possible, but individualizing it, because it will be possible for some athletes but it won't be for others. With some athletes, you can take the risk, but not with all of them. Coaches can ask us what the limits are, and we are there to advise them.

Whether working informally through their interactions or formally through workshops, the centre stakeholder concluded that it is crucial to do something, *'I think that at least we will be able to give them some guidelines about this topic, which is the important thing'*.

5.2.3 “Keen collaborator”

Stakeholder 3 had intentions to develop and implement a programme in the near future, saying ‘we’ve sketched out an approach...it’s just at a very high level and we’ll thrash that out and start next year...we need time for post Rio changes to occur’. They appeared optimistic about undertaking this task, commenting that ‘without being complacent or over-confident it looks like this is something we will be able to do’. When asked what the reasons were for them not having provision in place at present they explained:

We’re a young system and quite a targeted system so we have started with a performance focus and broadened, err, as our system has evolved and so (pauses) basically as we’ve progressed we have realised there’s been a gap there and we’ve been increasing focus on unethical behaviour and the implications and consequences of that.

In discussing the importance of introducing anti-doping education for coaches, stakeholder 3 described a combination of factors, ‘mostly about the effects, partly about strategy and partly around who we really want to be’. Elaborating on this, they said ‘given that high performance sport [is] centrally funded [it] depends on things such as inspiring a nation and um (pauses) and [our view is that] you had better win, but you’d better win well and so that how you do it [i.e., cleanly] [is important]’. Notably, their decision to introduce anti-doping education was self-driven, they had not been mandated by an external body (e.g., WADA), ‘to date there has been no pressure that I’m aware of to do it, um, but if we didn’t act I would expect that pressure to come because, you know (laughs) we need to do it’. In this vein, they reported having control over the decision to introduce anti-doping education:

We are a pretty egalitarian system here...I checked in with the CEO to see where he was at. He says “yep, great, perfect, carry on”. So it’s as quick as that. But, just, it is the right thing to do and there is no downside is there, so in this case it doesn’t really require a lot of decision making, it’s just obviously a really good idea.

Continuing to evidence their enthusiasm for introducing anti-doping education, they explained why they are in a strong position to encourage coaches to engage with anti-doping education:

It's just a good idea, so I would be surprised if anyone said no on the strength of that, but, in fact, in our system you know, we have kind of got a one stop shop through [Organisation] so we are the investor. So if an investor says "hey, let's do something that's good" er (laughs), whether you are keen or not you've got to go along with it.

Considering the matter of coach engagement further, the stakeholder suggested that Performance Directors are a key gatekeeper:

You know there is the decision maker of course, to whether they attend or not would be the Performance Directors...The performance director is the decision maker on things like performance and er yeah and in this case you would certainly work through them.

Indicating why this individual is particularly important in facilitating access to coaches, they explained:

I mean, you want them to...because they are decision makers you want their buy-in...Because you need access to the coaches' time and so the Performance Director would enable that or, or not, or if they were ambivalent and they said "yeah go ahead if you like, but I'm not interested" um, (pauses) no question that would be a barrier because the Performance Director is seen as the architect of the culture. So, the messages they are sending by not displaying any interest, by not attending, would certainly undermine the efforts. You know, we would be keen to understand their attitude, if that is the one they displayed.

Building on the notion of creating a consistent culture from top to bottom within a sport/team, they commented '*We haven't got to this detail, but we've been inviting in, [working as], a team as well so that, you know, the sport was there as a collective and giving the same message and, and looking at the same issues*'. Corroborating this, they stated that as a centre, they should '*be clear on their stance and then stick with it, so that others can leverage off this*'.

To monitor if sports, and their coaches, were engaging with the programme, the stakeholder commented:

We'd want to know what our reach has been because at the end of the day, um, we are not too much into arse covering here...we'd probably follow up, not on the basis of ticking the box, but because we'd be genuinely interested in coaches or NSOs/NGBs who didn't participate, because that would surely tell

us something about how they choose to operate...So we would be curious and have a follow up conversation, but not because we wanted to tick the box and say "yep we have covered off everyone".

In terms of evaluating the programme, the stakeholder proposed three things they might monitor: 1) *'who turns up'*, 2) *'who plans to do more'* and 3) *'changes in (pauses) policy isn't the right word, but...cultural statements, behavioural statements (pauses) er, in each sport'*, adding *'probably the ongoing tracking is around how many examples of unethical behaviour we have'*.

Monitoring ethical behaviours as an outcome to evaluate the programme is in line with the stakeholder's explanation regarding what the programme could look like:

So far we've just sketched out the concept and it's based on, you know, what are the key issues, so, you know, if we said this is drugs and match fixing and um, relationship issues and...athlete welfare, erm, appropriate relationships and boundary crossings. So, they seem to be the big ones.

Elaborating that:

Well rightly or wrongly. So this is just what we have thought of at this point. We figured that it wasn't about any one of the four, it was about ethics. So, without a vision for, for who we are and how we are, that's the most important thing. And er, and within that there are 4 constraints to, 4 big constraints to achieving that vision. Er well more than 4, but we take 4 and we figured the starting point was to raise awareness and to spark interest.

Notably, the stakeholder suggested that *'when we address the ethical issues in sport our performance will benefit'*, adding *'it's a performance environment so even a compliance issue would still be treated as a performance issue I would hope'*.

With regard to how the programme might be delivered, the stakeholder suggested that they would align this with existing practice in the centre:

We're designing the intervention based on what works on other subject areas so, again it's not a mystery how to do it...We run workshops...and typically we found that scenarios are a good way of doing that. So, rather than belting them over the head with a whole load of info we're designing really interesting scenarios. So, you know, if the athlete has done this or the coach has done that,

and of course there are also complicating factors...I mean they are just true stories actually you don't need to make anything up. So, you can just choose the real ones, they all have complicating factors and when you are put on the spot "how the hell would you deal with them?" Ok, "are you clear on your values and principles?" Probably not if it's on the spot and um so coaches will typically think "help, ok I did it, yeah I need to really clarify what I think about this and how I react and who I need to communicate with". So, we figure, you know, if we did a half day workshop to kick off, this is probably too much detail but it's something like that and then err, as part of that first workshop it's what are you keen to follow up on and in asking that question.

Although the stakeholder, and other staff within the centre, had already discussed and initially outlined indicative content, they were keen for NSOs and coaches to contribute to the development process:

The sports then take ownership and we help them design and deliver any follow-up they wish to do by delving into detail in any one of those areas. And if they said there was anything that we hadn't covered that was important to them then we would figure something out on there as well.

We kind of know all of them as well and er, it's not hard to ask informally or consult formally, but to date we haven't.

We know that the ownership needs to rest with the NGB and the coaches.

Building from this idea of working with sporting organisations to develop content, the stakeholder was keen to partner with several other organisations through the whole process of developing and implementing programmes:

Obviously we work close with [national sports organisation] who's keen to see us doing the right things, so we'd love to partner up and allow resources that are at your disposal. So, let's design something cool. We've got a player's association who are very keen to keep their players out of match-fixing, so they will happily partner up. In terms of athlete welfare our medical team are obviously all over that and in terms of relationships and boundaries the coaching team and the psych team within [national anti-doping organisation, NADO] will partner up. And you have an Olympic Committee, keen to be part of it so we'll partner with them in terms of the sponsorship and they have got resources around, you know, around Olympism on the...above the line stuff...we'll work with [NADO] and they seem to be pretty well resourced to work with what they need so.

Explaining the strength of this collaborative approach, they said:

We will facilitate it, if we think we have got the expertise we check with anyone who is an expert. Why would we bother if we could leverage [NADO] or leverage the player's association? So it makes sense to leverage the experts. They're fresh voices, they know what they are doing, um, and the obvious role is for us to facilitate, you know, whatever that may mean. So, yeah, facilitated leadership I think would be the best description.

They were optimistic that partnering with sporting and anti-doping organisations on developing and implementing anti-doping education for coaches would be relatively straightforward, *'we know each other. So, it's simply a phone call "Should we do this?" "Sh*t yeah, it's a good idea", "You wanna?"', "Yep"... There you go, let's do it'.*

5.2.4 "Accepting facilitator"

This stakeholder explained that there was growing interest in anti-doping as an area, stating *'Within our group itself there's an informal movement in terms of anti-doping, but at the moment there's nothing really active in that group in terms of anti-doping.'* Supporting the existence of an 'informal [anti-doping] movement', they explained that *'the implied attitude amongst us, and when I say "us" I'm talking about employees of the centre, the coaches and the athletes themselves, is that we are clean'.* While there was currently no provision in place, the interviewee reported that staff within the HPC were relatively well-placed in this area:

I have the feeling that we've got a pretty good handle right now on, on resources for our athletes. And when I talk resources, I'm talking about nutrition, nutritional counselling or supplements. In terms of where we can get supplements that are clean, I think we are doing ok.

That said, the stakeholder commented that there is a need for education for coaches going forward, even in areas where they are 'doing ok':

[It] might be good to have something in the way of talking individually to athletes and letting them know how important it is that they are buying their supplements from clean companies and not just buying from the internet or some, I don't know, some sport nutrition company in town that sells who knows what. So, maybe strategies to make sure the athletes are aware of the dangers of possibly, er accidentally taking tainted supplements. That might be interesting.

Beyond this, they suggested that education might aim to address coaches' concerns about the legitimacy and effectiveness of anti-doping efforts quite generally:

At the moment with all this Russian scandal going on I think we're all a little er, sceptical about what's really going on or what can really be effective in this anti-doping situation...I don't know, for lack of a better word we're pissed off that there is stuff still going on (laughs) and that it seems very hard to control.

This is likely because this is a topic that the coaches of the centre face in their practice, as they recalled *'I mean obviously right now with some of my athletes we're talking about what's going on in Russia, you know'*.

Discussing matters of engagement, including coaches' willingness to engage with education provision and every-day anti-doping responsibilities, the stakeholder said *'it's all informal stuff'*, explaining that *'in terms of talking on a regular basis about anti-doping there's not really a lot going on'*. Despite this reported low level of activity, they suggested that coaches would engage with education opportunities if they were provided, *'I can only truly speak for myself but my gut feeling would be yes, that coaches would make time for something like this'*. When asked to consider how engagement might be facilitated the stakeholder commented:

If it's really about trying to get sports clean or keeping sports clean, I think it's not really about certifications or qualifications, it's more about the information and being able to pass this information onto the athletes.

This appeared to be influenced by the individual's stage of career, as they explained:

I will probably be retiring in about 5, 6, 7 years. So for me qualifications and certifications are definitely not that important to me. For my younger colleagues it might be [important to receive accreditation/a qualification].

However, they also suggested that education being a requirement of a qualification or accreditation process could also devalue it, stating:

If I got the feeling this was a couple of hoops that somebody wanted us to jump through for political reasons or for, I can't think of the right word...(pauses) image reasons. I personally, I can't speak for my organisation, but for me personally I'm not interested.

With regard to challenges or barriers to developing and implementing anti-doping education for coaches, in this particular HPC the stakeholder felt that they would support this, particularly if it meant facilitating a programme that was provided by an external organisation such as a National Anti-Doping Organisation or Olympic Committee, *'if the funding was available and basically it's not costing us anything then I think we would be more than happy to host something like that yeah'*. In their survey responses, the stakeholder reported that they had no plans to develop their own programme, and this is most likely due to the fact they *'are a pretty small centre'*. Yet, their size means that they are able to operate relatively autonomously, and would be in a strong position to decide (and take action) to introduce a provision of anti-doping education for coaches if they wished to:

I would say that more or less we as a group can decide what we're going to do, but the boss or the director has perhaps more say than we do. Um, some decisions might be between the boss and I, some decisions might be discussed in a group with everyone part of the discussion. Some decisions will be made unilaterally by the boss, but then big decisions have to be ok to the board of directors, which is basically a political group of provincial and municipal politicians. [for anti-doping education, such as workshops were to be implemented in the centre] It would probably be a local decision...I think we could probably make that decision amongst us yeah, with the director.

5.3 Summary

Across the four case studies, centres displayed variations in their stage of development and implementation of anti-doping education for coaches; from those who have embedded and are maintaining anti-doping education for coaches in their culture to those who are only just beginning the process of designing or introducing programmes. Notwithstanding the development stage, none of the interviewed or surveyed centres suggested that they were against the introduction of anti-doping education provision in their organisation. This indicates that this is a viable avenue for WADA to pursue in the future. That said, resources (i.e., staffing, expertise, money and time) appear to be limited in these organisations. To work around this, existing collaborations between anti-doping (i.e., WADA, NADO) and sporting organisations (HPCs, IOC, NOCs/NGBs) should be capitalised upon to share the workload/responsibility, as well as sharing existing programmes/practice to avoid duplication of effort. Such collaboration also

ensures that consistent messages are reaching coaches from multiple sources which helps foster 'buy-in'. Stakeholders viewed this as paramount.

Details regarding desired outcomes and delivery of programmes (i.e., methods and topics) corroborate the findings of the survey. The case study centres typically offer anti-doping education via workshops or online methods, including webinars. However, two of the four centres also emphasised the importance of informal/non-formal learning opportunities, such as mentoring and day-to-day interactions (e.g., coaches being able to approach on-site experts ad hoc). Activities include the use of scenarios/dilemmas and case studies to allow coaches to think about, discuss and plan, their anti-doping actions. For example, how would they deal with rumoured doping among their athletes. In this vein, the intended outcomes of programmes were to make coaches aware of their roles and responsibilities, influence coach decision-making and increase anti-doping action being taken by coaches in practice (including the implementation of a code of conduct). To facilitate these aims, programme content related to the principles of drug-free sport (i.e., ethics) and coaches' roles and responsibilities. Content also covered rules and regulations (i.e., ADRVs, doping control), prohibited substances, medications/TUEs, nutritional supplements, and consequences of doping. Notably, two of the four centres had made a conscious effort to connect anti-doping to other topics within its curriculum, primarily health and safety/safeguarding, ethics, and performance (including nutrition and recovery).

Notwithstanding the development stage, none of the surveyed centres were against the introduction of an anti-doping education provision in their organisation. This indicates a viable avenue for WADA to pursue in the future.

6. Guidance and Recommendations

In drawing together evidence from the literature, survey and case studies this report offers several recommendations with regard to the development of a sustainable, co-operative, international anti-doping education programme for high performance coaches. These are presented in the form of a logic model (see Figure 1), which is a diagrammatic representation or ‘road map’ of a programme that depicts its ‘programme theory’ in terms of the target population, resources (‘input’), activities (‘output’) and intended results/outcomes (‘impact’) (See Box 1 for a glossary of terms).

Box 1. Glossary of logic model terms

Target populations – who will receive anti-doping education (Dwyer & Makin, 1997; Dwyer et al, 2003).

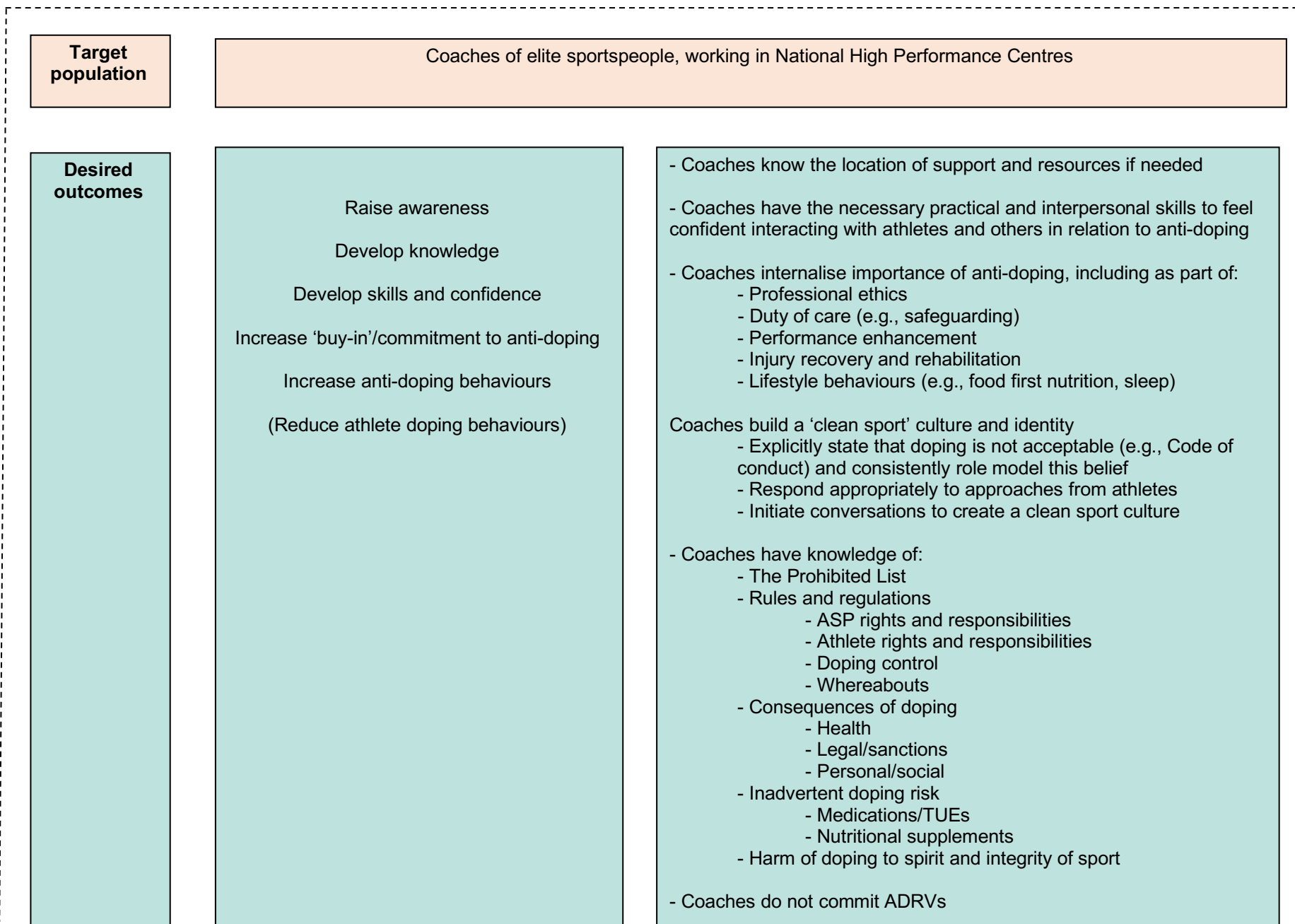
Resources/inputs – the people, expertise/knowledge, materials, finance, administrative and organisational support needed (Houlihan & Melville, 2011).

Activities/outputs – the processes, events, actions (i.e., content) produced to achieve the outcomes with the help of the resources, including topics covered and activities (Houlihan & Melville, 2011).

Intended results/outcomes/impact – typically categorised as short/immediate outcomes, medium/intermediate outcomes and longer term or overall outcomes (i.e. ultimate aim(s) for the programme) (Houlihan & Melville, 2011).

Logic models have been used for programme development, implementation and evaluation in a number of fields, including health and education. Yet, it is only recently that they have been indicated as potential tools for anti-doping education (Backhouse, McKenna & Patterson, 2009, Houlihan & Melville, 2011). Logic models facilitate communication, consensus and collaboration, as well as identifying gaps in logic/knowledge and tracking progress (Kaplan and Garrett (2005). Logic model development is an iterative, dynamic and cyclic process and should be approached with a ‘create, validate and update’ or ‘design, test, refine’ mentality (Porteous, Sheldrick & Stewart, 2002). Viewing logic models in this way means that they are cost-effective in the long-term as they allow programme developers to adapt existing programmes rather than beginning from ‘scratch’ (Kaplan & Garrett, 2005). Thus, the recommendations proposed here should be seen as the first step in an on-going process of designing and refining anti-doping education for high performance coaches.

Figure 1. A logic model outlining recommendations for the provision of global anti-doping education for high performance



Activities/ outputs	Delivery	<p>A combination of...</p> <ul style="list-style-type: none"> - <i>Formal</i> (e.g., integrated into qualifications/certification) - <i>Non-formal</i> (e.g., seminars, workshops, online resources, mentoring) - <i>Informal</i> (e.g., conversations, observations, self-reflection)
		Up-to-date and regular
	Content – activities	<ul style="list-style-type: none"> - Interactive opportunities for practical understanding/application - Case studies, scenarios, real-life examples to develop skills and competences - ‘Ethical dilemmas’ to think-through options and develop potential solutions and scripts - Discussions with others to share ‘good practice’
	Content – topics	<p>As per desired outcomes...</p> <ul style="list-style-type: none"> - A combination of practical and ethical issues must feature: <ul style="list-style-type: none"> - The Prohibited List / Rules and regulations / ASP rights and responsibilities / Athlete rights and responsibilities / Doping control / Whereabouts / Consequences of doping / Inadvertent doping (i.e., Medications/TUEs and Nutritional supplements) / Harm of doping to spirit of sport - Anti-doping should be strongly connected to other topics: <ul style="list-style-type: none"> - Professional ethics / Duty of Care / Performance enhancement / Injury recovery and rehabilitation / Lifestyle behaviours - Additionally, content should be tailored to sport, stage of coach development, and age/stage of athlete development
Resources/ inputs	<ul style="list-style-type: none"> - Limited resources <ul style="list-style-type: none"> - Time (of centre staff, as well as coaches) - Money - Experts/trained individuals are needed <ul style="list-style-type: none"> - Both internal and external to HPC - Collaboration and buy-in from everyone is a pre-requisite <ul style="list-style-type: none"> - Shared responsibility / co-ordinated and systematic approach across organisations, including: <ul style="list-style-type: none"> - Government - IOC, NOC, Olympic Solidarity - Sporting organisations (e.g., IFs / NFs, NGBs, NSOs) - Anti-doping organisations (i.e., WADA, NADO) - Coaching organisations (e.g., ICCE, National coaching associations) 	

6.1 Target populations

Purposeful programme theory begins by identifying its intended users (Funnell & Rogers, 2011). At the outset of this project, WADA identified the primary target population as coaches working in high performance coaching contexts. The literature review confirmed the importance of ensuring that anti-doping education reaches coaches working in high performance domains, as these coaches experience doping-related interactions (e.g., Patterson, 2014) and therefore they should be provided with opportunities to prepare for this. Findings of the survey and case studies indicate that HPCs are a viable environment to reach high performance coaches with anti-doping education opportunities, as coaches operate in these facilities on a daily basis and typically engage with general education and development activities in this setting. That said, these activities are sometimes optional, as opposed to mandatory, and the impact this might have on engagement from/reach among high performance coaches should be considered.

Although high performance coaches might be the priority population at present, under the WADC (WADA, 2015) and the ISCF (ICEE, ASOIF & LMU, 2013) anti-doping education should be provided to coaches working in all environments. Therefore, in the future WADA should consider going beyond high performance coaching and focus their efforts on performance development coaches, as well as spanning participation coaching contexts. This view was emphasised by Case Study 1, where the stakeholder strongly believed that anti-doping involves everyone and described the importance of reaching coaches when they are establishing their own coaching values/philosophy and ambitions. Educating individuals working in all domains would be beneficial as it would increase the likelihood that sportspeople receive consistent anti-doping messages across their developmental pathway. Reaching coaches in all domains is also desirable because there is evidence of the growing use of prohibited substances and methods in participation sport, such as gym users and university athletes (e.g., Backhouse et al, 2007, 2016). Yet, it is acknowledged that there are limited resources available to achieve this and it is not envisaged that HPCs would be the context in which this would occur.

Notably, coaches enter high performance sport through a multitude of pathways. These include regular progression through the various coaching qualification levels,

but also fast-tracking systems for former elite athletes (Côté, Erickson & Duffy, 2013; Lara-Bercial & Mallett, 2016). Likewise, some coaches progress through the age-groups, while others start their coaching careers already at the high performance end (Mallett, 2010). Research also shows that high performance beginner coaches favour a mix of formal, non-formal and informal learning opportunities, whereas competent and expert coaches prefer informal and non-formal options (Erickson, Côté & Fraser-Thomas, 2007; Lara-Bercial & Mallett, 2016) Ensuring that coaches receive relevant content, in the appropriate format, at an appropriate time in their development pathway is crucial to coaches buying into anti-doping efforts.

This is even more important considering that adult learning theory (Knowles, Holton & Swanson, 2011) suggests that coaches are less likely to engage with learning opportunities if they do not believe it will teach them something new. With this in mind, a progressive curriculum, where different topics are the focus at different times in the development of the coach, should combine the reaffirmation of key messages (such as the harm that doping causes to the spirit of sport) with content on fundamental topics related to anti-doping (i.e., those listed in the WADC, see section 6.2.2 for details). Further detail on structuring a progressive curriculum is included in the next section on desired outcomes. However, further research is needed to determine what anti-doping related content and type of learning experiences are more beneficial at different stages of coach development.

6.2 Desired outcomes

When read from top to bottom the desired outcomes presented in the logic model (Figure 1) display the potential progression from early desired outcomes to the overall aims of anti-doping education programmes for high performance coaches - to decrease doping behaviours among sportspeople. Notably, the outcomes are not proposed as a cause and effect relationship or simple attribution chain, whereby it is assumed that if A happens then B will happen (Funnell & Rogers, 2011). Instead, they are viewed as a complicated attribution outcome chain, which proposes that when A is achieved it helps bring about B or that A is necessary to achieve B (Funnell & Rogers, 2011). For example, a simple attribution chain would suggest that if coaches engage with anti-doping education their doping-related knowledge will increase. In contrast, a complicated attribution chain proposes that if coaches engage with anti-

doping education then it will likely help to increase knowledge, but this is not inevitable and there is no guarantee that imparting knowledge will bring about behaviour change. Seeing outcomes in this way gives important consideration to the reality that factors beyond the programme will undoubtedly influence the achievement of the programme's desired outcomes (Funnell & Rogers, 2011).

Extending this argument, if programmes are to change coaches' behaviours, consideration must be given to the outcomes that need to occur for this to happen (i.e., the mechanisms for change). Behaviour change research shows that this might include reducing ignorance/raising awareness, changes in motivation (e.g., increasing the relevance or making something mandatory), perceptions of benefit/costs (e.g., providing incentives or inducing fear of sanctions) and changes in an individual's capacity to act (e.g., improving knowledge or skills and confidence) (DiClemente et al, 2005, Webb, Sniehotta & Michie, 2010; Funnell & Rogers, 2011). Specifically, several authors have emphasised the difference between individuals being willing and able to change their behaviours (Jones, Armour & Potrac, 2004; McMillan & Conner, 2005; Rhodes & Nigg, 2011). Therefore, the logic model presents the desired outcomes for anti-doping education programmes for coaches across a continuum of: 1) coaches seeing the relevance of anti-doping to them (motivation to act), 2) coaches developing the knowledge, skills and confidence to undertake an anti-doping role (capability to act) and 3) coaches taking action (i.e., engaging in anti-doping behaviours/not engaging in doping behaviours) (opportunity to act).

6.2.1 Behaviours

The literature review points to an apathy amongst the coaching community to proactively engage in doping prevention (e.g., Laure et al., 2001). With regard to desired behaviours, stakeholders emphasised the importance of compliance in terms of coaches not breaking the rules (i.e., not committing ADRVs). Some stakeholders also articulated the need for coaches to promote an anti-doping culture and Figure 1 outlines how coaches might become more involved in anti-doping efforts in a gradual and developmental way. In the early stages of coach development, programmes could introduce a clean sport code of conduct and provide coaches with the confidence to react/respond in an informed manner to doping-related approaches. Longer-term behaviours might include supporting coaches in initiating anti-doping-related

conversations when appropriate and building a strong clean sport culture (i.e., explicitly stating that doping is not acceptable and consistently promoting fair play and positive ethical behaviours). To facilitate all of these behaviours, whether short- or long-term, coaches must feel capable of acting, have the opportunity to act, and be motivated to act (Michie et al., 2011).

6.2.2 Competence/Capability

The literature review showed that coaches' competence and perceptions of competence are the main reasons for coaches' inaction in an anti-doping context (e.g., Kirby, 2011, Laure et al., 2001, Patterson, 2014). Therefore, a starting point to enabling coaches to undertake an anti-doping role might be to focus on ensuring that they remember and understand relevant anti-doping rules and regulations. To remember and understand are typical early educational objectives (Krathwohl, 2002). Additionally, current anti-doping policy, namely the WADC (WADA, 2015), states that coaches (as ASP) have a responsibility to be knowledgeable of applicable rules and regulations. The WADC (WADA, 2015, pp. 96-97) also provides a list of topics that should be covered within education programmes:

- Substances and methods on the Prohibited List
- Anti-doping rule violations
- Consequences of doping, including sanctions, health and social consequences
- Doping Control procedures
- Athletes' and Athlete Support Personnel's rights and responsibilities
- TUEs
- Managing the risks of nutritional supplements
- Harm of doping to the spirit of sport
- Applicable whereabouts requirements

Insights from the literature review and stakeholders (via the survey and case study interviews) indicate that current programmes generally cover many of the topics on this list, particularly prohibited substances, doping control, nutritional supplements, medications/TUEs, consequences of doping, ASP rights and responsibilities and principles behind anti-doping (i.e., harm to the spirit of sport). However, evidence

points to an urgent need to move beyond knowledge and intellectual skills to a focus on practical skills in relation to anti-doping. Indeed, coaches must be presented with the opportunities (Michie et al., 2011) to apply their knowledge to their coaching practice (Krathwohl, 2002) and develop both their interpersonal skills and ethical decision making by engaging in interactive tasks such as scenarios, role-plays or case studies (Hanson, 2009). Employing practical tasks enables coaches to practice anti-doping behaviours, which is crucial to successful behaviour change because it gives coaches a chance to identify problems themselves, as well as having an opportunity to receive reinforcement or correction from their anti-doping educator (Weitkunat & Moretti, 2005). This experience has the potential to build their confidence (Corcoran & Feltz, 1993; Stevens, 2005), which is an important desired outcome as individuals are unlikely to change if they do not believe in their ability to change or perform the desired behaviour (Luszczynska & Sutton, 2005; Grodesky, Kosma & Solmon, 2006, NICE, 2007, Rhodes & Nigg, 2011).

Evidence points to an urgent need to move beyond knowledge and intellectual skills to a focus on practical skills and confidence in relation to anti-doping.

Given that coaches and stakeholders would like anti-doping education to help coaches develop emergent practice (i.e., learning what they could/should be doing in relation to anti-doping), these interactive opportunities should not consist of prescribing standard responses (Vella, Crowe & Oades, 2013). Instead, such tasks should aid individuals in analysing and evaluating matters, as well as creating solutions (Krathwohl, 2002). Many existing programmes appear to be engaging in interactive activities, which is encouraging. However, it is unclear if the content covered within these activities aligns with the coaches' doping-related interactions.

Research shows that to be most effective, the interactive tasks should closely relate to the experiences and real-life working context of the coach (European Coaching

Council, 2008; Hansen, 2009; Lara-Bercial et al., 2017). This is also a central premise of adult learning theory, which states that individuals' learning is enhanced when their prior experiences and abilities are recognised and they are helped to reflect on and build on them (Knowles, Holton & Swanson, 2011). Therefore, scenarios should focus on situations that are directly relevant to the coaches' practice. One way to approach this is to use case studies involving real-life examples of past incidents of doping in their sport. Doing this would also help to address coaches' perceptions that doping is not relevant to them, which is an important influence on action/inaction (Kirby, 2011, Patterson, 2014). Another way to relate the content of programmes to coaches' practice is to base it on the interactions that they face most regularly. For example, some coaches are most often approached to discuss the use of nutritional supplements and medications (Patterson & Backhouse, 2018), so the focus of anti-doping education and training might be to enable them to reduce inadvertent doping. However, given the variation in this area within existing research, HPCs should consult coaches working in their centre to establish their specific needs.

6.2.3 Motivation

Beyond developing coaches' knowledge and practical skills, enhancing coaches' motivation to act is crucial. Long-term engagement in the desired behaviours requires coaches to not only understand why anti-doping rules are in place and accept the value of them, but also see the relevance of anti-doping to them personally and commit to undertaking an anti-doping role because it is internally satisfying for them to do so (Krathwohl, Bloom & Masia, 1956, Grodesky, Kosma & Solmon, 2006). To this end, raising awareness is often an early focus of interventions for behaviour change (Prochaska, 2005) and has long been advocated as a low-level affective educational objective (Krathwohl, Bloom & Masia, 1956). In this context, raising awareness could involve numerous things, including signposting coaches to relevant information and resources to ensure that they know where to go if they need support and exposing coaches to the expectations placed on them through the roles and responsibilities outlined within policy (WADA, 2015) and by the HPC they operate within specifically. An articulation of expectations by the HPC may be important to prompt action, as Kirby (2011) found that coaches are more likely to act if they believe there is pressure to do so. This also supports the suggestion of WADA's Senior Director of Education and NADO/RADO Relations, Rob Koehler, that 'stakeholders, including coaches, should

be aware of their roles and responsibilities and what the consequences of breaking the rules are' (Play True, 2013, issue 1, p. 7). Therefore, this content should form the basis of a progressive curriculum for coaches.

Another low-order affective objective would be for coaches to have anti-doping attitudes. Indeed, it is important that individuals have positive attitudes towards the desired behaviours of interventions (NICE, 2007, Backhouse & McKenna, 2012). For example, in this case coaches cannot be expected to commit to positively influencing the beliefs of sportspeople if they do not hold the desired anti-doping beliefs themselves. Positively, the review of literature revealed that most coaches self-report anti-doping attitudes and acknowledge their role in influencing the anti-doping attitudes of their athletes (e.g., Laure et al., 2001). In particular, anti-doping attitudes are more likely in coaches working at higher levels (Kirby, 2011), such as those who are the current focus in HPCs. However, we must remain vigilant to socially desirable responding in this context and apply continued effort when it comes to fostering anti-doping attitudes in programmes within HPCs.

Furthermore, it is crucial that anti-doping attitudes are translated into anti-doping action. Due to a lack of research, very little is known about the factors that influence this process. However, the literature review provided insights to suggest that coaches' perceived competence, as discussed above, is key. Beyond this, coaches' beliefs about whether doping is a problem in their sport/environment were also important (e.g., Kirby, 2001, Patterson, 2014). Thus, coaches have to perceive anti-doping to be personally relevant. In this vein, Pawson and Tilley (1997) concluded that 'the people who are drawn into, lend support to, and are (perhaps) changed by the experience of a program[me] are those for whom it has salience' (p. 36).

General coach education and development literature suggests that the perceived relevance of a topic - in this case anti-doping - can be increased by ensuring that content is related to existing knowledge, the practical environment is considered, and opportunities to apply learning are provided (Cushion & Nelson, 2013). Hence why interactive activities that are closely linked to coaches' real-life practice were discussed in the previous section on competence. To further increase the perceived relevance of anti-doping, it could be embedded within other topics that coaches value

highly, particularly enhancing performance. This suggestion is supported by recent research (Patterson & Backhouse, 2018) investigating coaches' anti-doping roles and the factors that influence coaches' anti-doping behaviours, which showed that coaches prioritise performance and this can lead to anti-doping being low on their agenda. Therefore, to integrate anti-doping with performance-related topics would counteract this situation. Specifically, this could be achieved by incorporating anti-doping in coach education and training on topics such as recovery, hydration and nutrition, including supplements. Anti-doping could also be integrated with topics that are compulsory, such as health and safety, safeguarding and ethics. In doing so, anti-doping could be 'normalised' and integrated into all stages of coach development, as suggested by the stakeholder in Case Study 4.

This suggestion is also in line with evidence highlighting that coach education and development should be a lifelong process (Mallett & Lara-Bercial, 2016). In the early stages of coaches engaging with anti-doping (i.e., the start of the progressive curriculum), individuals could be encouraged to reflect on their coaching philosophy and consider how anti-doping prevention fits (or not) with this. This could include determining if anti-doping is important to them (NICE, 2007) and if they are currently actively engaged in anti-doping efforts or not (Grodesky, Kosma & Solmon, 2006). Once coaches have bought into anti-doping efforts, content within the progressive curriculum can move to introducing the anti-doping rule violations and consequences of doping, engaging with content related to other fundamental rules and regulations around athletes' rights and responsibilities, doping control, Whereabouts and appropriate use of medications (TUEs). The latter, along with minimising the risk of nutritional supplements, is particularly pertinent given the prohibition of ADRVs that are related to inadvertent doping.

Importantly, although these topics are primarily deterrence and compliance driven, coaches should be exposed to positive messaging where possible, i.e., the emphasis should be on promoting clean sport and enhancing positive development in sportspeople. Drawing upon the Positive Youth Development literature, it could be argued that "problem free is not fully prepared" (Roth & Brooks-Gunn, 2003, p. 94). In other words, young non-doping athletes are not guaranteed a doping-free career nor a happy and fulfilling life. It would be important to provide coaches with the knowledge

and skills to support positive personal development in athletes. For instance, promoting the development of Lerner's six Cs of Competence, Confidence, Connection, Character, Caring and Contribution (Lerner, 2008) could give athletes a deeper understanding of what it means to lead a happy life and indirectly deter doping behaviours or tendencies. Facilitating coaches' acquisition of this knowledge may provide a positive additional angle of attack in the promotion of clean sport.

6.2.4 Assessing if outcomes have been achieved (programme evaluation)

Ideally, every anti-doping education programme that is developed and implemented for coaches should be monitored and evaluated. Monitoring involves tracking resources or statistics on a regular basis by routinely collecting information (NICE, 2007). In contrast, evaluation is formally assessing the process and impact of a programme (NICE, 2007). In the first instance, monitoring the 'exposure' of coaches to anti-doping education would be beneficial to determine if programmes are reaching their target population on a consistent basis (de Vlaming et al, 2010). Some centres, including Case Studies 1 and 3, were monitoring, or proposed to monitor, the frequency of coaches who had engaged with their programme. International (i.e., WADA) and national (e.g., UKAD) also maintain records regarding the number of coaches who have used their programmes (see Patterson, Duffy and Backhouse, 2014).

Beyond monitoring exposure, outcome or impact evaluations are of utmost importance, particularly longitudinal research that investigates the effects of education programmes on coaches' behaviours over time and the determinants at play (DiClemente et al, 2005, Mazanov, 2009, Funnell & Rogers, 2011, Rhodes & Nigg, 2011). Yet, these outcomes might not easily be measured. Consequently, centres currently rely on 'proxy measures' (Funnell & Rogers, 2011), primarily coaches' self-reports such as feedback on the educational experience and reflections on what they have done since. Going forward, centres could explore the possibility of triangulating this data (Funnell & Rogers, 2011) with insights from sportspeople to verify if the coaches do what they say they do, but also to establish if coaches' actions have any/the intended influence on their athletes.

In hand with monitoring the reach and outcomes of programmes, developing the means to conduct a needs assessment of coaches prior to programme participation may be worthwhile, as different interventions may be needed for different individuals at different stages of personal development (i.e., early career coach vs established coach) and behaviour change (i.e., people who are motivated to change compared to people who are not) (Adams & White, 2005, NICE, 2007, Rhodes & Nigg, 2011). This is particularly relevant as both the literature review and stakeholder insights indicated that some coaches are reluctant to engage with anti-doping education opportunities (and anti-doping actions thereafter).

6.3 Activities/outputs

To achieve the intended outcomes, consideration must be given to the type of information that might be provided or the type of activities that are necessary (Funnell & Rogers, 2011). Two key features of the content of anti-doping education programmes for coaches have already been discussed within the competence subsection of desired outcomes: 1) the use of interactive case studies or scenarios (displayed as 'activities' in Figure 1) and 2) the need for programme content to reflect coaches' interactions with sportspeople (displayed as 'topics' in Figure 1). This section will not repeat those recommendations relating to activities. Instead, the focus will be on delivery, specifically methods and frequency.

6.3.1 Methods

The need for different opportunities to learn, including formal, informal and non-formal methods, came through strongly from coach education and development research (e.g. Cushion et al., 2010, Mallett & Lara-Bercial, 2016). The use of multiple methods is also supported by research in the anti-doping field (Backhouse, McKenna & Patterson, 2009), including consultations with coaches (Patterson, 2014). With regard to the latter, coaches called for an increase in all forms of anti-doping education opportunities, including non-formal (e.g., seminars, workshops), and informal provision (i.e., online, printed and electronic materials, and mentoring/discussions with other coaches) (Patterson, 2014). Notably, adult learning theory states that offering a variety of learning opportunities allows for differences in style, time, place and pace of learning (Knowles, Holton & Swanson, 2011). However, limited resources (i.e., time and money) have been highlighted as a challenge affecting HPCs' capacity to a give

coaches a choice of different methods. This will be discussed in section 6.4 (Resources/inputs).

At present, most HPCs focus their attention on a variety of mediated and non-mediated (Moon, 2004) opportunities, including workshops, online programmes, and additional electronic materials. This appears to align with the approach taken by WADA through their development of the Coach's Tool Kit and CoachTrue, as discussed in the literature review. Interestingly, only one⁷ of the HPCs mentioned these resources in their survey or interview responses. Therefore, it is recommended that WADA engages in discussions with the centres to determine if they are aware of these resources and explore the potential for them to be utilised in HPC contexts going forward (i.e., if they are aware of them, ask why they do not use them and what would make them more likely to use them in the future / if they are not aware of them, ask them to familiarise themselves with them and consider their appropriateness for use in their centre). In particular, further research is needed with coaches themselves to explore if they would engage with e-learning opportunities. This is particularly important given that WADA have recently launched their online platform, ADeL, and that programmes and materials hosted on this platform can be made available for organisations at no cost, which would help to address the lack of resource among HPCs (which will be discussed in the final section of the logic model, 6.4).

Research shows that coaches are willing to engage with e-learning under certain conditions: i) when the time required to complete the training is not too burdensome; ii) when they feel supported by a community of practice during completion of the course; and iii) when the course is endorsed by a reputable organisation or institution (Sackey-Addo & Camarero, 2016). Likewise, online coach education has been shown to have moderate to strong effects on coach learning and attitude changes (Driska & Gould, 2014; Glang et al., 2010; Montelpare et al., 2010). This may depend on the topic under consideration as well as the characteristic of the learning platform.

Whether developed by WADA or others, it appears that many coaches are not engaging with anti-doping education at all (Patterson, Duffy & Backhouse, 2014).

⁷ Case Study 1 briefly refers to CoachTrue, but not by name.

Therefore, increasing the reach of programmes is essential. This can be achieved by integrating anti-doping into formal coach education and development (i.e., qualifications and certification). Additionally, it can be achieved through effective marketing to ensure that coaches are aware of the opportunities available to them. Such marketing activity should not only aim to increase the number of coaches who engage with programmes, but also should aim to ensure that coaches know where to go for up-to-date and reliable information. The latter is particularly important because there appears to be a reliance on self-directed methods (e.g., searching the internet, reading books) (Patterson, 2014), which could lead to coaches obtaining, and passing on, information that is not accurate.

Finally, the need for an increased offer of collaborative learning opportunities requires consideration because 1) coaches have a desire to interact with 'experts' and share good practice in relation to anti-doping, and 2) research in adult education and development states that regular and accessible support should be available to coaches (Moon, 2004). An example of what this might look like in practice is provided by the HPCs in Case Studies 1 and 2, who had coach mentors (1) and experts on site (2), respectively.

6.3.2 Frequency

Given the dynamic nature of anti-doping (e.g., the Prohibited List being updated annually), it is important to ensure that coaches remain up to date. Providing regular updates or 'boosters' has been shown to be beneficial in other areas to prevent undesirable behaviours (see Backhouse, McKenna & Patterson, 2009). Moreover, this is particularly important to coach education and development as research states that coach education provision tends to be episodic (Vargas-Tonsing, 2007), yet coach development and learning continues beyond coaches' completion of their national federation qualifications (Lara-Bercial & Mallett, 2016). However, it is not clear how often this should occur due to a lack of research.

The case studies revealed that current practice may vary. The HPC in Case Study 1 provided education on an annual basis and the HPC in Case Study 2 approached anti-doping on an ad hoc and 'day-to-day' basis due to their structure/approach. Similarly, coaches in previous research (Patterson, 2014) put forth suggestions ranging from

when needed (i.e., when 'significant changes' to process or substances occurs) to annually and every 'few' years. If anti-doping education were integrated into coaches' ongoing professional development, the frequency at which they must engage in compulsory education regarding child protection or first aid might be considered. Ultimately, the timing and frequency of anti-doping education for coaches warrants further investigation.

6.4 Resources/inputs

According to Houlihan and Melville (2011) resources include materials and people (including their expertise/knowledge), as well as the financial, administrative and organisational support involved in providing anti-doping education programmes. Based on stakeholder insights, the main challenge in providing anti-doping education for coaches within HPCs appears to be limited resources, with centres requiring more time and money to improve their provision in this area. Due to the limited resources, a common theme throughout stakeholder insights was the sharing of resources across organisations. For instance, some HPCs programmes were delivered by staff external to the HPC who have specific expertise in anti-doping, typically NADO personnel. Therefore, consideration should be given to whether centres are capable of providing education to coaches or simply acting as a 'host' based on their circumstances. Utilising HPCs as a host could address the matter of resource (i.e., avoiding the centre having to train someone and giving this person time to deliver sessions) and would increase consistency across contexts (i.e., avoid someone delivering without expertise or with outdated knowledge).

In addition to aiding with programme delivery, NADOs were a key source of guidance for HPCs, as were sporting and/or coaching organisations. Indeed, regardless of the specific organisations involved, a clear message from the stakeholders was that collaboration, and shared responsibility, is essential. There are many benefits to building partnerships between organisations and Herman et al (2011, p. S131) discussed the 'added value' of forming 'coalitions' as:

- reaching goals in a more efficient, effective and sustainable manner,
- reducing competition between organisations and decreasing duplication of effort through improved communication and trust building,

- promoting multi-level, multi-faceted programmes that work synergistically to address complex problems, and
- creating a critical mass of interested persons and necessary resources to effect change

Coalitions may range between few and many members (Herman et al., 2011) and need not be limited to partnerships between the HPC and their NADO, as some HPCs are also drawing on the IOC/NOC, IFs, NGBs/NSOs, and coaching associations. As discussed previously, one benefit of multiple organisations being involved in anti-doping efforts is synergy, in that it increases the likelihood that coaches are receiving coherent and consistent messages, demonstrating, and hopefully facilitating, 'buy-in'. Additionally, almost all of these organisations are expected to take responsibility for promoting anti-doping education according to current anti-doping policy (i.e., the WADC). Therefore, their involvement aids them in fulfilling this expectation. Having said this, it is important to highlight that the educational capacity of NADOs is not consistent, owing to differences in the funding and resource allocation model. Until the contentious issue of funding for doping prevention is addressed, education will continue to be the poor relation in the anti-doping domain.

Through the survey and interviews it was noted that WADA were not explicitly referred to as a key collaborator. This may be due to the involvement of NADOs, in that HPCs seek anti-doping-specific assistance from their national organisation. This seems like a reasonable approach, as the NADO is well-placed to provide local, culturally-specific and perhaps more accessible support to HPCs. With this in mind, and considering the limited resources available in the HPC context, WADA might encourage HPCs, whether directly or via NADOs, to utilise their existing programmes (i.e., the Coach Tool Kit and/or CoachTrue) to minimise the demand for resource placed on both the HPC and NADO. Indeed, WADA could create the foundation of the progressive curriculum, which anti-doping, sporting and coaching organisations can utilise, and work together on, to develop coach anti-doping education that is specific to their sport, nation and coaching workforce, before being applied in contexts as close to the daily environment of the coach as possible (i.e., HPCs).

Aligned with this, if WADA wish to establish a minimum standard of provision to coaches at a global level it might be beneficial for them to work in partnership with key stakeholders, such as anti-doping, sporting (including IFs and HPCs) and coaching organisations to co-produce a framework for anti-doping education for high performance coaches (the logic model presented here may offer a starting point). Upon creating such a framework, WADA must consider how they might have more influence among organisations in a position to deliver anti-doping education to coaches (e.g., HPCs) in order to maximise the framework's reach and impact. One avenue to increase reach and impact would be for WADA to introduce a mandate with the framework, whereby organisations were asked to meet specific requirements such as integrating anti-doping into coach qualifications/certification, implementing coach anti-doping education ahead of major competitions (e.g., Olympics, World Championships) and having anti-doping feature in coach employment contracts.

7. Conclusion

The aim of this project was to provide guidance for the development of a sustainable, cooperative and international anti-doping education and training programme for high performance coaches. In particular, specific consideration has been given to the feasibility of utilising HPCs as a context in which this could be implemented. Taken together, the findings suggest that this is a viable avenue to pursue given the motivation, capability and opportunity presented by HPCs. With regard to position, coaches are present in HPCs and this context provides the opportunity to interact with the target population. With regard to motivation, HPCs appear to exist on a continuum of interest and involvement in providing anti-doping education, with some being more enthusiastic and active than others. This led to the development of a typology of anti-doping in high performance centres.

In terms of emergent practice, much can be learned from the 'Passionate, proactive programmer', who demonstrated a well-established provision of anti-doping education for coaches that emphasised real-world learning (i.e., coaches thinking through their actions and being observed in practice) that had not only been embedded in coach education in a practical way, but also seemed to be genuinely valued within the centre and formed an essential part of a culture that promoted clean and safe sport for all. Commitment and buy-in from all within the HPC appears central to achieving this standard.

Although not all centres were as far along in the implementation of anti-doping education for coaches, an unwillingness to support coaches to fulfil their anti-doping roles and responsibilities was not identified at any of the HPCs. Broadly, the main barrier to implementation was resource. In this vein, limited time and money strongly influence the centres' capability to provide anti-doping education for coaches and for this reason collaborations between HPCs and other organisations are essential to making anti-doping education for coaches in HPCs work. These relationships facilitate sharing of resources and responsibility, as well increasing the consistency and coherence of anti-doping efforts.

7.1 Steps for WADA to take to implement the findings

HPCs have been found to be a viable avenue to reach coaches through the provision of anti-doping education. WADA should therefore engage with the ASPC to discuss how coach-focussed anti-doping education and support can be implemented in HPCs across the world. While HPCs are not a direct signatory of the Code, WADA already has an established memorandum of understanding with the ASPC and this could be used as a foundation for the discussion. Additionally, the coaches operating within the HPC context are likely employed by a sporting organisation (i.e., NOC, NGB) and/or are working in a sport whose national and international federation are Code signatories. Therefore, other parties (such as the relevant national or international sporting organisations) might be included in this discussion. In particular, these organisations might be asked to endorse the importance of HPCs implementing coach-focussed anti-doping education and ongoing anti-doping support. This could be promoted to these organisations as a means through which they can meet their Code-ascribed responsibility to educate key stakeholders, including coaches – making the arrangement mutually beneficial. This collaborative approach goes some way to addressing concerns about resources, which is something that centres themselves called for. Additionally, it will enhance the likelihood of ‘synergy’, as expressed as being crucial to the success of the ‘Passionate, Proactive Programmer’.

During, or following, the discussion regarding implementing coach-focussed anti-doping education and support in HPCs, WADA should ensure that the ASPC, and eventually HPCs, are aware of the programmes and resources that WADA has available for immediate use. Making existing programmes and resources available for use might help to alleviate any concerns from HPCs regarding the costs (including both money and time) of implementing coach-focussed anti-doping education and support in their centre. Taking into account the recommendations outlined in Section 6, including the logic model, HPCs should aim to signpost resources and existing programmes as a minimum. They might also adopt the position of the ‘Accepting Facilitator’ in allowing other sporting (e.g., NGBs) and/or anti-doping organisations (i.e., NADOs) to use their centre as a means to reach coaches (i.e., be a ‘host’).

7.2 Steps for HPCs to take to implement the findings

For HPCs who are keen to go beyond the steps outlined above, guidance on potential actions can be gleaned from the 'Keen Collaborator', 'Committed Casual Contributor' and/or 'Passionate Proactive Programmer' (see Table 4 for an outline of potential actions). In determining what actions they will take, HPCs should be encouraged to undertake consultations (i.e., needs analysis) with coaches to establish capability, opportunity and motivation for clean sport. This is incredibly important given that HPCs will not only differ in terms of the sports that they host (i.e., coaches in Skiing might want education on different topics to those in Volleyball), but also with regards to their size and structure (i.e., there might be a small number of coaches and other support staff or a large number of coaches and other support staff). Each HPC can use this insight to develop tailored content and intervention functions. Using a culinary analogy, the logic model (and the additional information stated in Table 4) can be used as a generic recipe which provides a list of recommended 'ingredients'; each centre may choose different ingredients and in different amounts based on what kind of development opportunity they need to create to meet their coaches' 'dietary requirements', i.e., from a light snack (a newsletter or short workshop) to a three-course meal (a formal education course).

7.3 Steps to be taken to continue to develop guidance for sustainable, cooperative and international anti-doping training for high performance coaches

As stated previously, the logic model presented in this report should be treated as the first step in an ongoing process of designing, testing and refining coach anti-doping education. Further research is needed with both coaches (as consumers) and sporting, anti-doping and coaching organisations (as providers) to co-construct appropriate programmes, as well as monitoring and evaluation approaches. Based on the findings of this study, our recommendation is that the next steps in this process should be to:

- Explore informal/non-formal avenues to support coach education programmes in the long-term.
- Develop and communicate minimum international standards for coach anti-doping education.

Table 4. Spectrum of potential actions to implement coach anti-doping education in HPCs

	Keen Collaborator Intending to develop and implement a programme	Committed Casual Contributor Organic, informal and unplanned	Passionate Proactive programmer Well-established formal provision of anti-doping education for coaches
Employment-related actions	<ul style="list-style-type: none"> - Seek permission from Performance Directors for coaches to engage with anti-doping education. 	<ul style="list-style-type: none"> - Have a designated anti-doping ‘Activator’, who is appropriately trained to provide (accessible) support to coaches on anti-doping related matters 	<ul style="list-style-type: none"> - Include doping-related scenarios/questions in application/interview process - Ask staff to agree to a Code of Conduct, which includes a clear statement regarding their anti-doping roles and responsibilities - Include a statement related to anti-doping in employee contract
Education and development actions	<ul style="list-style-type: none"> - Provide anti-doping learning opportunities within the HPC in the form of workshops 	<ul style="list-style-type: none"> - Embed anti-doping into the coach education and development activities of the HPC - Offer in-person learning opportunities, including formal ‘meetings’ and informal interactions - Schedule formal learning opportunities well in advance to maximise the likelihood that coaches will attend - Tailor content to be sport-specific, where possible - Signpost online resources - Ensure all staff are aware of how to access support from the anti-doping Activator 	<ul style="list-style-type: none"> - Provide regular learning opportunities to coaches that are integrated into the coach education and development process both within and outside HPC - Offer a combination of formal, informal and non-formal learning opportunities, such as in-person seminars, e-learning modules, and online webinars and podcasts - Make clear to coaches who they can contact for support with anti-doping, both internal and external to the HPC - Undertake an awareness raising campaign (e.g., social media, posters, leaflets) - Provide (compulsory) education (online or in-person)
Monitoring and evaluation actions	<ul style="list-style-type: none"> - Keep records regarding how many coaches (and which coaches) have engaged with anti-doping education opportunities (i.e., attendance at sessions) - Ask coaches what their intentions and plans are for undertaking anti-doping actions in their practice - Check if coaches have a Code of Conduct in place with their athletes 	<ul style="list-style-type: none"> - Regularly ‘check in’ with the anti-doping Activator to gauge the frequency and nature of the doping-related interactions he/she has had with coaches 	<ul style="list-style-type: none"> - Keep records of the coaches engaging with anti-doping education opportunities (i.e., attendance at sessions, completion of online modules) - Disseminate self-report surveys (e.g., related to coaches’ engagement in education, as well as their behaviours in practice) - Check if coaches have a Code of Conduct in place with their athletes - Ask coaches to provide evidence of their engagement in anti-doping actions in practice (e.g., self-reflections on doping-related conversations or other interactions with athletes, such as providing education) - Ask coaches to engage in reflective conversations with mentors - Have mentors observe coaches in practice

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Educating and Developing Coaches in a High-Performance Environment

Currently, we know very little about the status of anti-doping education provided to coaches globally. This lack of insight is worsened by the limited availability of information regarding general coach education and development processes at an international level.

This survey is part of a global study of High Performance Sport Centres which aims to determine the provision of coach education and development opportunities, with a particular focus on anti-doping education. The questions ask you to outline the coach education programme(s) that you currently have in place. Further, your opinions on the way things are now and the way you think they ought to be in the future are sought.

If this study is to be helpful, it is important that you answer each question as thoughtfully and frankly as possible. This study is completely voluntary and if there are any questions that you do not wish to answer, just leave them blank. Your identity will not be revealed in any publications arising from this study and your data will be anonymised and stored on a password-protected computer.

Thank you very much for being an important part of this project.

Dr Laurie Patterson, Prof Susan Backhouse and Dr Sergio Lara-Bercial
Leeds Beckett University, UK

Section 1. About you and your organisation

1. Please state the name of your High Performance Centre

Click here to enter text.

2. Please state the geographical location of your centre (i.e., the country)

Click here to enter text.

Job Role(s)

Due to the nature of the questions within this survey, we realise that several individuals from your organisation might contribute to its completion.

3. Please describe the current role within your centre of the individual who completed the largest proportion of this survey

(e.g., job title, main role and responsibilities, how long this individual has been in this job/position in years)

Click here to enter text.

4. Please describe the current role(s) within your centre of any other individuals who contributed to the completion of this survey

(e.g., job title, main role and responsibilities, how long individuals have been in their job/position in years)

Click here to enter text.

Existing Services for Coaches

5. Does your centre provide education and development opportunities for coaches?

Yes

No

If you answered 'No', please use this space to provide an explanation for this selection and then skip to Q9.

Click here to enter text.

If you answered 'Yes' to Q5, please provide details in the space below and continue to Q6:

Click here to enter text.

6. Does coach education and development feature in your centre's strategic plan?

Yes

No

If you answered 'Yes', please provide details in the space below or send us the relevant documentation.

Click here to enter text.

7. Are your coach education and development programmes evaluated?

Yes

No

**If you answered 'Yes', please provide details in the space below:
(e.g., who undertakes this evaluation and what are the findings)**

Click here to enter text.

8. Are you given any guidelines to work from when planning coach education and development?

(e.g., do you draw upon national coaching frameworks, sport-specific frameworks, other organisations or policy documents?)

Yes

No

If you answered 'Yes' to Q8, please describe the guidelines you are given or send us the relevant documentation.

Click here to enter text.

9. In the future, is there anything you would like to do with regard to coaches' education and development?

Yes

No

If you answered 'No' to Q9, please provide an explanation for this selection in the space below:

Click here to enter text.

If you answered 'Yes' to Q9, please provide details of what you would like to do in the future with regard to coach education and development within your centre in the space below:

Click here to enter text.

10. Who do you think is in the best position to deliver coach education to high performance coaches?

(e.g., your organisation, International Federations for each sport, National Federations for each sport, the International Olympic Committee, National Governments, National Coaching Organisations or other organisations)

Click here to enter text.

Section 2. Anti-Doping Education for Coaches

11. Does your centre provide anti-doping education for coaches?

Yes

No

If you answered 'No' to Q9, please answer questions 12 to 14.

12. What are the reasons that anti-doping education for coaches is not currently provided by your centre?

Click here to enter text.

13. If your centre was to provide anti-doping education to coaches, what topics would be covered? Please describe in the box below.

Click here to enter text.

14. If your centre was to provide anti-doping education to coaches, how would it be delivered? Please describe in the box below.

(e.g., existing coaching-related qualifications/certification, conferences, workshops, seminars, printed materials, electronic or online materials, self-directed learning or other methods)

Click here to enter text.

If you answered 'Yes' to Q11, please answer questions 15 to 20.

15. What topics are covered in the anti-doping education programmes that your centre provides to coaches?

Click here to enter text.

16. How is the anti-doping education for coaches delivered by your centre?

(e.g., existing coaching-related qualifications/certification, conferences, workshops, seminars, printed materials, electronic or online materials, self-directed learning or other methods)

Click here to enter text.

17. Who delivers the anti-doping education for coaches that your centre provides?

Click here to enter text.

18. Are you given any guidelines to work from when planning anti-doping education for coaches?

Yes

No

If you answered 'Yes' to Q18, please describe the guidelines you are given in the space below:

Click here to enter text.

19. Are your anti-doping education programmes for coaches evaluated?

Yes

No

If yes, please provide details in the space below:

(e.g., who undertakes this evaluation and what are the findings)

Click here to enter text.

20. Does your anti-doping education programme for coaches offer an example of best practice?

Yes

No

Please justify your answer in the space below:

Click here to enter text.

Section 3. Future Focus

21. Please comment on the feasibility of integrating anti-doping education into coach education and development processes within your centre in the future (if they are not currently integrated).

Click here to enter text.

22. Please describe any barriers/challenges to designing or delivering anti-doping education for coaches for your centre.

Click here to enter text.

23. Please outline any plans that you have regarding the development or delivery of anti-doping education for coaches in the future.
In particular, please provide details of any solutions and recommendations that might address the barriers/challenges that you identified in Q22.

Click here to enter text.

24. Which organisation should lead the delivery of anti-doping education for coaches? Please outline in the box below.

Click here to enter text.

Feedback

Please use the space below to give any further comments regarding coach education or anti-doping education.

Click here to enter text.

If you have any comments on the survey, please provide them in the box below.

Click here to enter text.

Thank you for your time and contribution. It is appreciated.

Appendix B: interview guide

Topic	Main questions	Survey/follow-up questions	Added COM-B questions
Demographics	Please describe your current role within your centre	Job title Years in post Previous roles/experience/background	Are you responsible for/involved in decisions regarding the provision of coach and/or anti-doping education?
Coach education	You said in your survey that your centre [DOES] provide education and development opportunities for coaches, could you please tell me more about this?	<p>What does the programme consist of? (How many sessions, how frequently do they take place, what topics are covered?)</p> <p>What drives the provision of education? (e.g., external requirements, laws, policy, features in HPC strategy/KPIs)</p> <p>Are you given any guidelines to work from? (Do you draw upon national coaching frameworks, sport-specific frameworks, other organisations or policy documents)?</p> <p>Is the education designed in house or are you facilitating external content? If so, for which organisation?</p> <p>Is the education programme evaluated? If so, how? Is this process managed internally or externally?</p>	<p>Do you believe your centre has capacity to provide coach education? Why/why not?</p> <p>Do you feel motivated to provide coach education within your centre? Why/why not?</p> <p>Could you tell me about the opportunities your centre has to provide coach education?</p> <p>What are the barriers/challenges to providing coach education?</p> <p>How could coach education be facilitated? / What would need to be done/changed?</p>

	<p>You said in your survey that your centre [DOES NOT] provide education and development opportunities for coaches, could you please tell me more about this?</p>	<p>What are the main reasons?</p> <p>Has this always been the case, or have there been any changes over time? (When and why?)</p>	<p>Do you believe your centre has the capacity to provide coach education? Why/why not?</p> <p>Do you feel motivated to provide coach education within your centre? Why/why not?</p> <p>Do you believe your centre has the opportunity to provide coach education? Why/why not?</p> <p>What are the barriers/challenges to providing coach education?</p> <p>How could coach education be facilitated? / What would need to be done/changed?</p>
	<p>[ALL] In the future, is there anything you would like to do with regard to coaches' education and development?</p>	<p>[YES] What would you like to do?</p> <p>[ALL] What are the reasons for this?</p>	

Anti-doping education	You said in your survey that your centre [DOES] provide anti-doping education for coaches, could you please tell me more about this?	<p>What topics are covered?</p> <p>How is the anti-doping education for coaches delivered by your centre? (e.g., coaching-related qualifications/certification, conferences, workshops, seminars, printed materials, electronic or online materials, self-directed learning or other methods)</p> <p>Is the education developed specifically for coaches?</p> <p>Who delivers the anti-doping education for coaches that your centre provides?</p> <p>Are you given any guidelines to work from when planning anti-doping education for coaches?</p> <p>Are your anti-doping education programmes for coaches evaluated? If so how? If not why?</p>	<p>Do you believe your centre has sufficient/good capacity to provide coach education? Why/why not?</p> <p>Do you feel motivated to provide coach education within your centre? Why/why not?</p> <p>Could you tell me about the opportunities your centre has to provide coach education?</p> <p>What are the barriers/challenges to providing coach education?</p> <p>How could coach education be facilitated? / What would need to be done/changed?</p>
	You said in your survey that your centre [DOES NOT] provide anti-doping education for coaches, could you please tell me more about this?	<p>What are the main reasons?</p> <p>Has this always been the case, or have there been any changes over time? (When and why?)</p>	<p>Do you believe your centre has the capacity to provide coach education? Why/why not?</p>

		<p><i>If your centre was to provide anti-doping education to coaches...</i></p> <p>What topics would be covered?</p> <p>How would it be delivered? (e.g., existing coaching-related qualifications/certification, conferences, workshops, seminars, printed materials, electronic or online materials, self-directed learning or other methods)</p>	<p>Do you feel motivated to provide coach education within your centre? Why/why not?</p> <p>Do you believe your centre has the opportunity to provide coach education? Why/why not?</p> <p>What are the barriers/challenges to providing coach education?</p> <p>How could coach education be facilitated? / What would need to be done/changed?</p>
	<p>[ALL] Do you have any plans to develop delivery of anti-doping education for coaches in the future.</p>	<p>Do you think it would be feasible to integrate anti-doping education into coach education and development processes within your centre in the future (if they are not currently integrated).</p>	

