Doping in sport: An analysis of sanctioned UK rugby union players between 2009 and 2015

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RUNNING HEAD: AN ANALYSIS OF SANCTIONED UK RUGBY UNION PLAYERS

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Abstract

To inform anti-doping policy and practice, it is important to understand the complexities of doping. The purpose of this study was to collate and systematically examine the reasoned decisions published by UK Anti-Doping for doping sanctions in rugby union in the UK since the introduction of the 2009 World Anti-Doping Code. Case files were content analysed to extract demographic information and details relating to the anti-doping rule violation (ADRV), including individuals' explanations for how/why the ADRV occurred. Between 2009 and 2015, 49 rugby union players and one coach from across the UK were sanctioned. Over 50% of the cases involved players under the age of 25, competing at sub-elite levels. Reasons in defence of the ADRV focused on functional use and lifestyle factors rather than performance enhancement. An *a priori* assessment of the 'need', 'risk' and 'consequence' of using a substance was not commonplace; further strengthening calls for increasing the reach of anti-doping education. The findings also deconstruct the view that 'doped' athletes are the same. Consequently, deepening understanding of the social and cultural conditions that encourage doping remains a priority.

Key words: anti-doping; WADA; anti-doping rule violations; rugby union

Introduction

Media headlines highlight that doping is omnipresent in sport, yet fail to convey the complexities of the behaviour, which can perpetuate a naïve belief that all 'doped' athletes are the same (Pluim, 2008). The World Anti-Doping Agency (WADA) define doping as "the occurrence of one or more of the anti-doping rule violations (ADRVs) set forth in Article 2.1 through Article 2.10 of the *Code"* (World Anti-Doping Agency, 2015, p. 18). Taken together, the ten ADRV's define a spectrum of behaviours, ranging from the presence of a prohibited substance (or its metabolites or markers) in an athlete's sample (Article 2.1) to associating with any athlete support personnel (e.g., coach, doctor, physiotherapist) who are serving an ADRV or have been found guilty of a criminal or disciplinary offence that is equivalent to an ADRV (Prohibited Association, Article 2.10). Moreover, because the WADA enforces strict liability under Article 2.1 and 2.2 of the Code (World Anti-Doping Agency, 2015; p.141), an ADRV can be established without an Anti-Doping Organisation having to demonstrate "intent, *Fault*, negligence or knowing *Use* on the Athlete's part". This cornerstone of the Code further extends the potential for heterogeneity across doping cases.

These points notwithstanding, there is still a tendency to label athletes who commit an ADRV as a 'doper' regardless of the context and circumstances leading to that ADRV. For example, an athlete who unintentionally and unknowingly consumes a banned substance by ingesting a nutritional supplement is often labelled a 'doper' in the same way as an athlete who has deliberately used an anabolic steroid to gain an unfair advantage over others. Yet while both cases violate the anti-doping rules, the former would not constitute 'cheating' as the athlete in question was not

intentionally seeking to gain an unfair advantage over others. Extending the argument further, an athlete who deliberately uses a banned substance might not be driven by a desire to outperform others in a sporting context. Instead, they may be using chemical assistance to recover from injury, cope with stress and return to play. In this instance use is defined by functionality rather than performance enhancement (Petróczi, 2013). Indeed, many ADRVs do not involve individuals who are deliberately trying to gain an unfair advantage over others - some involve the use of recreational drugs or mistakenly ingesting a prohibited substance via medication or nutritional supplements (Henning & Dimeo, 2015; Pluim, 2008). However, the 'doper' label still pervades. Consequently, there is a pressing need for research to carefully deconstruct the 'cheating narrative' (Tamburrini, 2006) so that anti-doping policy and practice can evolve as an evidence-based field.

One of the reasons for labelling athletes who commit an ADRV as 'dopers' might be associated with research traditions in the field. Typically, studies examine the antecedents of prohibited substance use. With use and intention to use prohibited substances driving the research agenda, a number of 'critical incidents' that could lead to doping have emerged. These include career transitions (Kirby, Moran, & Guerin, 2011; Lentillon-Kaestner & Carstairs, 2010; Mazanov, Huybers, & Connor, 2011), suffering an injury (Bloodworth & McNamee, 2010; Kirby, et al., 2011; Whitaker, Long, Petróczi, & Backhouse, 2014), a desire to maintain current standard of living (Bloodworth & McNamee, 2010) and experiencing a series of poor performances (Kirby, et al., 2011) being identified. However, these critical incidents are defined by the consumption of a substance included on the *Prohibited List* (the list is updated annually by the WADA and contains information on any substance or

method that is prohibited at all times or in-competition only) (World Anti-Doping Agency, 2016) and thus only apply to two of the 10 ADRVs. Yet if we are to understand how/why individuals fail to comply with anti-doping policy, it is important to deepen our understanding of the nature of the behaviour to be changed (Michie, van Stralen, & West, 2011). In order to do so, we need to investigate all the behaviours that constitute doping under the Code. This shift in focus would also reflect policy changes brought into the 2015 WADA Code which hold athlete support personnel (ASP) more accountable for their role in doping. It is worth emphasising that not all ADRVs are committed by athletes. Infact, six of the 10 ADRVs also apply to ASP.

The sensitive and taboo nature of doping in sport presents real challenges for furthering our understanding of this behaviour in context as it can be difficult to recruit 'dopers' to participate in research. However, in fulfilling their policy prescribed obligations, UK Anti-Doping (UKAD) publicly discloses the details of all the hearings leading to a period of ineligibility. This source of information allows us to explore the self-declared reasons for committing an ADRV within each case. Although, it is important to be aware that these self-declared reasons may have been derived by individuals (and their legal team) in an attempt to reduce a sanction and thus may not be completely truthful, they do provide a unique opportunity to extend our understanding of the complexity of doping in sport. Responding directly to calls for research to be sport-specific (Mohamed, Bilard, & Hauw, 2013), the objective of this study was to examine the reasoned decisions for individuals serving a period of ineligibility from the sport of rugby union in the UK since the 2009 Code came into effect. The decision to focus on rugby union was taken due to the

exponential increase in the number of individuals from rugby union within the UK serving a ban for committing an ADRV (UK Anti-Doping, 2015). In addition, the majority of those serving a period of ineligibility within rugby union have been emerging from amateur level competition (UK Anti-Doping, 2015) where external rewards are limited and the disseminated drivers for doping in sport (e.g., sport sponsorship, financial rewards, contract renewal; Mazanov, et al., 2011; Whitaker, et al., 2014) may not apply.

Methods

Following ethical approval from the University Research Ethics Committee, this research adopts a case study approach focusing specifically on rugby union and utilising sources available in the public domain only. In the UK, details of individuals who have committed an ADRV and are serving a period of ineligibility are published on the UKAD website with the exception of cases managed elsewhere (e.g., by World Rugby). PDF files relating to each sanctioned case occurring between 2009 and 2015 were collected from the websites of UKAD, Rugby Football Union (RFU) or World Rugby. We reviewed cases from 2009 onwards because those cases were subject to the implementation of the second World Anti-Doping Code published in January 2009. Content analysis was then used to extract the following information from each case: 1) player age, 2) playing level, 3) geographical location of the club being represented, 4) violation committed, 5) period of ineligibility and 7) the individuals' explanation recorded at the panel hearing. It should be noted that the amount of information included in each case varies and where an individual did not contend the ADRV, no information was provided to explain how/why the ADRV occurred. Equally,

some cases omitted demographic information (e.g., age or playing level at the time of receiving the ADRV). Therefore, in a bid to obtain the missing data we also conducted web searches using Google to identify media stories relating to each player identified as currently serving (or having previously served) a sanction.

The information presented in this paper conveys the detail provided about each case that is freely available in the public domain. Thus, we cannot be sure that the cases represent the 'truth'. For example, explanations provided by individuals regarding how/why the ADRV could have occurred may not be accurate as the accused may have offered an alternative explanation in an attempt to change/reduce their sanction. Yet if individuals' accounts have been constructed in an attempt to influence sanctions imposed, this information can inform policymakers about how successful (or unsuccessful) defence teams are in securing reduced sanctions or indeed whether the anti-doping regulations are understood. Equally, it is not possible to provide in-depth information about the circumstances surrounding each case by analysing case reports alone because the reasoned decisions provide insufficient information to do so. However, collating and analysing the available information allows us to systematically review the sanction landscape of rugby union and explore any patterns that may emerge between cases. Growing numbers of ADRV's associated with rugby union in the UK underscore the need to develop our understanding of the circumstances leading to an ADRV so that we can tailor anti-doping policy and practice accordingly. In turn, this evidence-based approach is more likely to reduce the number of players committing ADRV's as the behavioural diagnosis will enable tailored intervention functions to emerge (Michie, et al., 2011).

Findings

In total, 50 male rugby union players received sanctions between 2009 and 2015 (2009, n= 1; 2010, n= 2; 2011, n= 4; 2012, n= 7; 2013 n= 13, 2014 n= 13, 2015 n= 10). However, in their 2014-2015 Anti-Doping report (Rugby Football Union, 2015), the RFU reported a further four cases were on-going and therefore could not be commented on at the time of publication. Therefore, the number of sanctions between 2009 and 2015 may increase from 50. Figure 1 highlights the geographical distribution of the sanctioned cases and demonstrates the clustering of cases, particularly in Wales. The age of players/coach at the time of receiving their sanction ranged from under 18 to 38, with the majority being under 25 (Table 1).

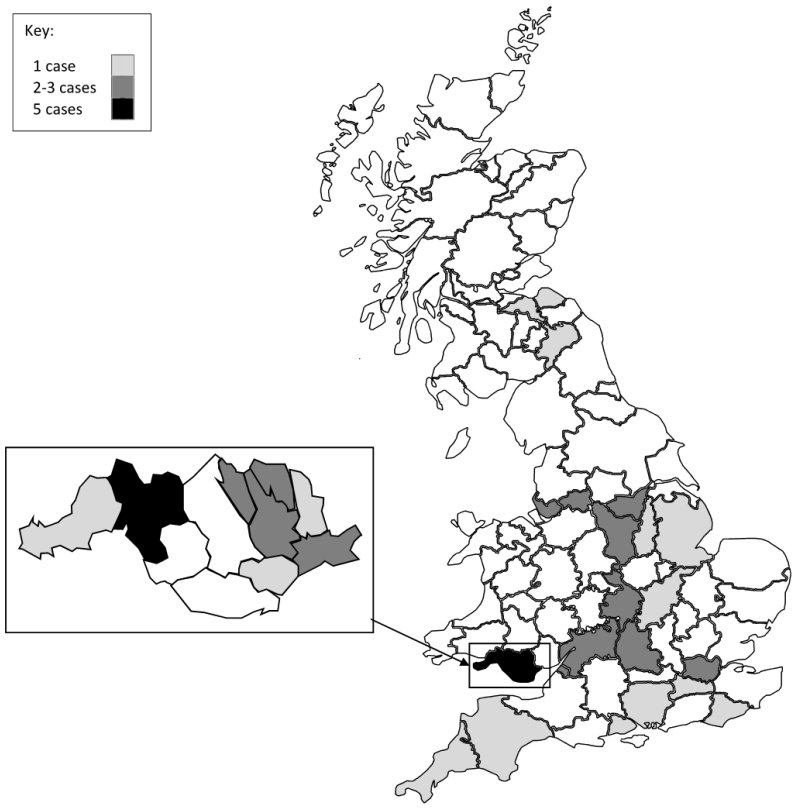

Figure 1. Geographical distribution of sanctioned cases (Scotland = 3, England = 27, Wales = 20).

Table 1: Age of players at time of sanction

Age range	Number of players
Under 18	5
18-25	22
26-33	10
34-41	4
42-49	0
50-57	1
Unknown	8
Total cases	**50**

Playing level

Players received their sanctions whilst competing at a range of levels within the English, Scottish and Welsh rugby union systems (Table 2). However, based on the information presented it appears the majority of sanctioned players were competing in lower leagues.

Table 2: Level of players at time of sanction

Country	Level of rugby competition	Number of players
England (n= 27)	Premiership/A league (1)	3/1
	Championship (2)	2
	National League One (3)	6
	6	4
	7	2
	9	1
	College	7
	County U15-18 coach	1
Scotland (n= 3)	Premiership (2)	2
	5	1
Wales (n= 20)	Wales development 7s (1)	1
	Premiership (2)	6
	Championship (3)	6
	5	1
	6	3
	8	2
	Lower levels	1

ADRV committed

Thirty four players were sanctioned for the *presence* of a prohibited substance (analytical finding) while 10 were sanctioned for *use or attempted use* of a prohibited substance (non-analytical finding). Of those that were sanctioned for *use or attempted use*, three were brought to hearing after ordering human growth hormone or steroids online, five were found with needles and/or a prohibited substance in their possession and two were uncovered by club coaches. Moreover, three individuals were sanctioned for possession and trafficking, whilst three players were sanctioned for refusing and failing to comply with testing procedures.

Substance(s) and length of sanction

Players were sanctioned for the *presence* of or *attempted use* of three different types of drug; anabolic agents (n= 27), stimulants (n= 15) and hormone and metabolic modulators (n= 6). Typically, individuals received standard bans for these ADRVs: two year bans (n= 30) under the 2009 WADA Code and four year bans (n= 6) after the introduction of the 2015 WADA Code (2015). However, if certain conditions are met, it is possible for individuals to receive a ban reduction or suspension (as detailed in Article 10 of the Code; World Anti-Doping Agency, 2015). In relation to the *presence* of or *attempted use* of a prohibited substance, an individual can receive a ban reduction or suspension if they can: 1) prove unintentional use, 2) prove no significant fault or negligence (e.g., following use of a specified substance), 3) provide substantial assistance in discovering/establishing other ADRVs or 4) make a prompt admission of the ADRV.

Four adolescents received reduced bans: three following immediate admissions (15 or 21 months) and one for unintentional use due to his dyslexia and dyspraxia (2 years). Six individuals received reduced bans (between 3 and 6 months) due to the presence of a specified substance (e.g., methylhexanaemine) and one player received a one-year ban for exceptional mitigating circumstances following the presence of benzoylecgonine (cocaine metabolite). In contrast, it is also possible for individuals to receive lengthier bans for committing multiple ADRVs or for committing more serious ADRVs (e.g., trafficking or administration of a prohibited substance). Under the 2009 WADA Code, two players received increased bans (3 years or 3 years and 3 months) for the use of multiple anabolic agents and the purchase of human growth hormone for personal use and family member supply. In addition, two individuals received eight year bans for trafficking and possession of anabolic agents where typical bans range from four years to lifetime ineligibility depending on the severity of the ADRV (Table 3).

Table 3: Class of drug and length of bans

Class of drug	Length of ban received	Number of players*
Stimulants (e.g., methylhexanaemine, benzoylecgonine)	3 months to 2 years	15
Hormone and metabolic modulators (e.g., human growth hormone, clomiphene)	2 years to 3 years 3 months	6
Anabolic agents (e.g., testosterone, dianabol, trenbolone, clenbuterol, drostanolone, 19-norandrosterone)	15 months to 4 years	27

*Total is greater than 44 as some players used more than one type of drug

Self-declared ADRV explanations

The explanatory information documented in each reasoned decision varied considerably across those players contesting the charges. Further, there was no case report available for three individuals and eight individuals chose not to contest the charge, so their case did not go to a hearing. Consequently, these 11 cases were precluded from further analysis.

Three cases involved trafficking and three involved refusing to provide a sample. Explanations for the latter ADRV's included one player with two failed attempts at sample collection terminating the test due to a university exam and the other players not submitting to doping control (stating work commitments/the use of painkillers for back pain resulting in urinary retention in their reasoning). In

addition, one case involved the online purchase of human growth hormone for personal use and supplying to a family member, while another involved the online purchase of testosterone for bodybuilding purposes after quitting rugby due to injury. The focus of the subsequent analysis will be on the 31 cases which provided at least basic details on individuals' explanations for how/why the ADRV occurred.

Through analysing the cases, it was possible to group them into five themes with some cases overlapping more than one theme. The first four themes involved use of a substance 1) to enhance recovery from injury, 2) to cope with work and sports demands, 3) to aid weight management and 4) for personal reasons. The final theme centred around the naïve use of nutritional supplements.

Enhance recovery from injury. Eight cases involved players who declared that they had used a substance to help them to recover from an injury. Six of the players were aware that the substance they were using was prohibited in rugby. However, the other two players believed they were using permitted supplements that were 'safe' and did not contain a prohibited substance. One player claimed that he always conducted research before using supplements and therefore believed that he tested positive due to contamination of the product he was using during the manufacturing process. In comparison, the other player conducted research after finding out he had tested positive. This post-hoc research revealed he was using a product that contained prohibited prohormones.

Cope with work and training demands. Three of the cases involved players who were managing the dual-responsibilities of demanding occupational roles and rugby playing commitments. Two of the individuals reported that they were struggling to deal with the work and training demands placed on them and therefore

were becoming very fatigued. The other player testified that his occupational role was being compromised because he had been asked to step in for the first team and he found it difficult to cope with the increased training and competition demands at that level. All three players reported that in order to fulfil their work and training demands, they used nutritional supplements to reduce fatigue and enhance recovery from training. Their explanations focused on being able to carry out their jobs rather than enhance their rugby performance. According to the reasoned decisions, none of the players were aware that the nutritional supplement they were taking contained a prohibited substance. All three cases reported that players had received little, if any, anti-doping education.

Weight management. Eight cases purportedly involved the use of a substance for weight management purposes with three players looking to aid weight loss/burn fat and four players looking to increase in size. Three of the cases relating to increasing in size involved adolescent players who stated that they felt under pressure to bulk up for rugby. In comparison, three of the cases relating to weight reduction were for vanity reasons. Six players admitted that they knew the substance they were using for weight management was prohibited for rugby. One player said he only found this out though *after* he had undertaken a drugs test, which prompted him to research the substance. It is unknown whether five of the players had ever received anti-doping education but in three of the cases, it was specifically reported at the hearing that no education had been received.

Personal reasons. Nine cases involved the use of a substance for personal reasons that were not directly associated with playing rugby union. Two players reported taking substances to deal with sexual dysfunction (one player reported

taking Klomen to help enhance his sex drive while another reported taking a number of products including Test Propate to treat erectile dysfunction). A third player reported using Anti-Esto to ameliorate the symptoms of gynaecomastia while another player reasoned he had used some tablets given to him from a friend at a time where he was feeling extremely low and vulnerable. Five players had used cocaine, with four reporting use on a night out when they were not due to be playing rugby. However, they stated that they received a last minute call to play the following day. One player reported using cocaine once to deal with his personal problems at the time.

Naïve use of nutritional supplements. Six cases involved players who had been seemingly naïve and careless when using nutritional supplements. A professional player stated he mistakenly drank from a bottle he believed to contain only water but in fact contained *Anabolic Nitro.* This product was supplied to the club through a sponsorship deal and consequently, six players were using the supplement. The club briefly withdrew supply in 2010 following two positive cases in South Africa, but reinstated supply in 2011. Following the player's ADRV, his club requested *Anabolic Nitro* to be tested for the stimulant methylhexanaemine and analysis confirmed the presence of the specified substance in the batch. This case underscores the need to follow risk minimisation protocols in order to prevent inadvertent doping and safeguard players. The other five ADRV cases reported here involved players who consciously chose to ingest the supplement that led to their ADRV. Two players did not do any checks before ingesting *Xtreme Mass* and *Jack3d*. In addition, one player reportedly did some basic checks before using *Unstoppable* but believed it was safe because his team mates were using it. Two of these cases stated that the players had

not received any anti-doping education but while one was an inexperienced adolescent player, the other was an experienced semi-professional who said he was an 'advocate for drug-free sport'. In the other cases, financial constraints led a student to reduce his checks when using a housemates' protein supplement, while the final player was aware of the need to use batch-tested supplements, but temporary retirement led to a drop in standards and the purchase of non-batch tested products. An ADRV was subsequently recorded following doping control at an international match.

Discussion

Between 2009 and 2015, 49 rugby union players (two of which were also ASP) and one coach were sanctioned for committing an ADRV. Of the 10 ADRVs set out by the WADA, five were present in the 50 rugby union cases. Nevertheless, over 50% of the cases involved players under the age of 25, competing at sub-elite levels and sanctioned for the ADRV's involving the *presence* of a prohibited substance or the *use or attempted use* of a prohibited substance. Commonplace across the cases reviewed was a lack of awareness of the consequences of using the substance at the point of ingestion, often due to the failure of players to do the necessary checks to determine the associated risk of using a particular substance. As the concept of strict liability defines current anti-doping policy and practice, it is vital that players become habituated in 'assessing the need, assessing the risk, and assessing the consequences' of using a substance *a priori.* This is particularly important for young amateur players who may become reliant on chemical assistance and this could serve as a gateway to the use of prohited substances (Backhouse, Whitaker, &

Petróczi, 2013; Ntoumanis, Ng, Barkoukis, & Backhouse, 2014; Petróczi, 2013). Equally, the use of chemical assistance could compromise a users health and well-being in the short, medium and long-term.

Explanations provided for using a substance were rarely associated with attempts to outperform others or for the purpose of rugby performance enhancement. Rather, defences built around functional use dominated, alongside lifestyle factors. In nine of the 31 cases analysed in depth, individuals admitted to knowing they were using a prohibited substance and their reasons included recovery from injury and/or for weight management. Similarly, eight cases provided explanations involving the functional use of nutritional supplements (three for weight control, three for combatting fatigue and two for injury recovery) rather than to gain an unfair advantage over others. These findings give weight to the proposal that doping is a functional behaviour (Petróczi, 2013), driven by a desire to (1) maximise personal athletic competence (2) cope with stress or (3) optimise physical appearance. The explanations offered in the reasoned decisions provide insight into how/why an ADRV may have occurred. With this knowledge, ASP could aid doping prevention by creating supportive environments that foster positive behaviours to help athletes deal with periods of instability. For example, providing players with functional alternatives (e.g., individualised nutrition plans based on a food first approach and strength training programmes) may prevent young players from habitually using chemical assistance in order to achieve a 'quick fix'.

Previous research analysing athletes' defences against doping accusations found that there were three general explanations offered: 1) imputed culpability (crediting the ADRV to other people or circumstances, e.g., result of misinformation,

unwitting mistakes or personal hardship), 2) performance repentance (accepting responsibility for actions and repenting whilst seeking empathy, e.g., acknowledge ADRV but use lack of education as a reason for non-compliance) and 3) virility defence (deny doping allegations on the basis they don't need to dope to excel; Henne, 2016). There are similarities between Henne's (2016) research and the present study in that imputed culpability and performance repentance are two approaches evident within the reasoned decisions of the UK rugby union players. In particular, cases are built on the contextual factors behind the sanction with the majority of the reasoned decisions pleading innocence in some way (e.g., the use of a contaminated supplement, lack of anti-doping education). Yet current policy enforces strict liability and therefore being unaware that an action constitutes an ADRV is often disregarded as a reason to reduce sanctions. In addition, strict liability forces a focus on the individual athlete (holding them culpable and responsible for what is in their body) whilst ignoring broader social relations (e.g., social and cultural conditions that encourage doping). Thus negligence from clubs for example who fail to protect their players from doping (e.g., through the delivery of education) is ignored.

Within the 31 reasoned decisions that provided at least basic details on how/why the ADRV occurred, one third declared that they had never received anti-doping education. If an individual has not received education and therefore lacks sufficient knowledge to enable them to fully comply with anti-doping regulations, it could be deemed as unfair for them to be sanctioned. However, strict liability disregards this as an individual does not have to have intent to commit an ADRV. Therefore, national governing bodies and clubs should have a responsibility to

ensure that their athletes (and ASP) are fully informed of anti-doping regulations so that they are able to comply. Compulsory education delivered within rugby clubs supported by the rugby union national governing bodies could be one way of ensuring that players and ASP are not uninformed about anti-doping regulations. In turn, this may lessen the potential for a lack of education and unwitting mistakes to be used in defence of ADRVs and increase the confidence of the anti-doping panels to challenge these claims.

Given that three of the cases involved ASP and one involved a possible future ASP (sport and exercise science student), it is important that individuals are cognisant of the implications of serving a period of ineligibility for their short- and long-term sporting and career ambitions. The ASP who received sanctions were not only prevented from playing rugby union, but also experienced detrimental effects on their career (e.g., loss of job) because their sanction inhibits them from working in a sport environment. Since the introduction of the 2015 WADA Code (World Anti-Doping Agency, 2015) and the inclusion of complicity and in particular prohibited association as ADRVs, it is essential that individuals are knowledgeable of anti-doping to protect themselves from committing an ADRV and risking their own career. For example, a university student committing an ADRV - whilst training to become a sports coach - could thwart his/her career due to prohibited association. Raising awareness of these implications may encourage individuals to take greater care and consideration when making behavioural choices. Previous research has indicated that ASP are unaware of their responsibilities under the Code, leaving themselves (and their athletes) vulnerable to committing an ADRV (Backhouse & McKenna, 2011; Backhouse & McKenna, 2012; Mazanov, Backhouse, Connor, Hemphill, &

Quirk, 2014). In recognition of the importance of developing anti-doping knowledge and understanding amongst ASP, employees of the English Institute of Sport undertake the UKAD advisor course to ensure they are up-to speed on all anti-doping matters. This model of practice could be adopted by the sport governing bodies as part of their Code of Conduct, whereby all ASP working within rugby clubs have to undertake the UKAD advisor course as a condition of their employment.

Conclusion

Rugby union players serving a period of ineligibility for committing an ADRV span the length and breadth of the UK, map across the participation spectrum and provide multiple explanations for the ADRV's committed. Taken together, the findings underline the complex and idiosyncratic nature of doping behaviour and highlight players aged 18-25 years as a particularly 'at-risk' group. Although current anti-doping regulations do not take into account knowledge and intention when determining that an ADRV has occurred, it is important that well-being is at the forefront of prevention. Ensuring that athletes and ASP are fully aware of the anti-doping regulations not only equips individuals with the ability to conform, it will also prevent defence cases being constructed around 'innocence'. However, it is also necessary to gain an understanding of the social and cultural conditions behind prohibited substance use. An over-reliance on chemical assistance, particularly at a young age may leave players vulnerable to committing an ADRV. Therefore, a deeper understanding of the social and cultural conditions surrounding doping behaviour is necessary for the development of tailored interventions designed to address the rising tide of ADRV's in the sport of rugby union.

References

Backhouse, S. H., & McKenna, J. (2011). Doping in sport: A review of medical practitioners' knowledge, attitudes and beliefs. *International Journal of Drug Policy, 22*, 198-202.

Backhouse, S. H., & McKenna, J. (2012). Reviewing coaches' knowledge, attitudes and beliefs regarding doping in sport. *International Journal of Sports Science and Coaching, 7*(1), 167-175.

Backhouse, S. H., Whitaker, L., & Petróczi, A. (2013). Gateway to doping? Supplement use in the context of preferred competitive situations, doping attitude, beliefs, and norms. *Scandinavian Journal of Medicine & Science in Sports, 23*(2), 244-252. doi: 10.1111/j.1600-0838.2011.01374.x

Bloodworth, A., & McNamee, M. (2010). Clean Olympians? Doping and anti-doping: The views of talented young British athletes. *International Journal of Drug Policy, 21*(4), 276-282. doi: 10.1016/j.drugpo.2009.11.009

Henne, K. (2016). Defending doping: Performances and trials of an anti-doping program. *Journal of Sport & Social Issues, 40*(3), 175-196. doi: 10.1177/0193723515596203

Henning, A. D., & Dimeo, P. (2015). Questions of fairness and anti-doping in US cycling: The contrasting experiences of professionals and amateurs. *Drugs: Education, Prevention and Policy, 22*(5), 400-409. doi: 10.3109/09687637.2015.1029872

Kirby, K., Moran, A., & Guerin, S. (2011). A qualitative analysis of the experiences of elite athletes who have admitted to doping for performance enhancement. *International Journal of Sport Policy, 3*(2), 205-224.

Lentillon-Kaestner, V., & Carstairs, C. (2010). Doping use among young elite cyclists: A qualitative psychosociological approach. *Scandinavian Journal of Medicine and Science in Sports, 20*, 336-345. doi: 10.1111/j.1600-0838.2009.00885.x

Mazanov, J., Backhouse, S., Connor, J., Hemphill, D., & Quirk, F. (2014). Athlete support personnel and anti-doping: Knowledge, attitudes, and ethical stance. *Scandinavian Journal of Medicine & Science in Sports, 24*, 846-856. doi: 10.1111/sms.12084

Mazanov, J., Huybers, T., & Connor, J. (2011). Qualitative evidence of a primary intervention point for elite athlete doping. *Journal of Science and Medicine in Sport, 14*(2), 106-110. doi: 10.1016/j.jsams.2010.06.003

Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science, 6*, 42-42. doi: 10.1186/1748-5908-6-42

Mohamed, S., A. , Bilard, J., & Hauw, D. (2013). Qualitative and Hierarchical Analysis of Protective Factors against Illicit Use of Doping Substances in Athletes Calling a National Anti-Doping Phone-Help Service. [Journal article]. *Montenegrin Journal of Sports Science and Medicine, 2*, 21-25.

Ntoumanis, N., Ng, J. Y., Barkoukis, V., & Backhouse, S. (2014). Personal and psychosocial predictors of doping use in physical activity settings: A meta-analysis. *Sports Medicine, 44*(11), 1603-1624. doi: 10.1007/s40279-014-0240-4

Petróczi, A. (2013). The doping mindset—Part 1: Implications of the functional use theory on mental representations of doping. *Performance Enhancement and Health, 2*(4), 153-163.

Pluim, B. (2008). A doping sinner is not always a cheat. *British Journal of Sports Medicine, 42*(7), 549-550.

Rugby Football Union. (2015). Anti-doping programme annual report 2014-2015. Retrieved from http://www.englandrugby.com/mm/Document/General/General/01/31/51/98/RFUAnti-DopingAnnualReport2014-15Final_English.pdf

Tamburrini, C. (2006). Are Doping Sanctions Justified? A Moral Relativistic View. *Sport in Society: Cultures, Commerce, Media, Politics, 9*(2), 199 - 211.

UK Anti-Doping. (2015). Current anti-doping rule violations. Retrieved from http://www.ukad.org.uk/anti-doping-rule-violations/current-violations/

Whitaker, L., Long, J., Petróczi, A., & Backhouse, S. H. (2014). Using the prototype willingness model to predict doping in sport. *Scandinavian Journal Of Medicine & Science In Sports*, 24(25), E398-E405 doi: 10.1111/sms.12148

World Anti-Doping Agency. (2015). The World Anti-Doping Code. Retrieved from https://wada-main-prod.s3.amazonaws.com/resources/files/wada-2015-world-anti-doping-code.pdf

World Anti-Doping Agency. (2016). World Anti-Doping Code: The 2016 Prohibited List. Retrieved from https://wada-main-prod.s3.amazonaws.com/resources/files/wada-2016-prohibited-list-en.pdf