Coping by doping?

A qualitative inquiry into permitted and prohibited substance use in competitive rugby

Faye F. Didymus and Susan H. Backhouse

Leeds Beckett University, United Kingdom

Author Note

Faye F. Didymus and Susan H. Backhouse; Carnegie School of Sport; Leeds Beckett University; United Kingdom.

This work was supported by a grant from the Carnegie Researcher Development fund at Leeds Beckett University.

Correspondence concerning this article should be addressed to Faye F. Didymus; Carnegie School of Sport; Leeds Beckett University; Headingley Campus; Leeds; LS6 3QS; United Kingdom. Telephone: 4411-3812-6709. E-mail: F.Didymus@leedsbeckett.ac.uk

Abstract

Objectives: Despite a growing body of literature examining the social psychology of doping in sport, stressors and coping as potential doping risk and or protective factors have received scant attention. The aim of this study was to explore permitted and prohibited substances when coping with stressors among a sample of rugby players.

Design: Underpinned by our constructionist epistemological position and our relativist ontology, we conducted a qualitative study using semi-structured interviews.

Methods: Following criterion-based sampling, we interviewed three women and eight men (M_{age}=22.64, *SD*=2.66 years) who were competing in rugby league (n=7) or rugby union (n=4) at national level one or above in the United Kingdom. We recursively used six phases of reflexive thematic analysis to analyze the data, and enhanced rigor by focusing on a worthy topic, coherence, rich rigor, credibility, and making a significant contribution.

Results: The sampled players used permitted and prohibited substances to cope with stressors (e.g., injury, pressure to perform, selection) and perceived these substances to be helpful during injury rehabilitation; to facilitate sleep, performance, recovery, and selection; and to adjust bodyweight and composition. The health risks of permitted and prohibited substances, anti-doping rules, parents, and the athlete's persona had both protective and vulnerability roles.

Conclusions: The findings highlight the rugby players' diminished capacities to anticipate, cope with, resist, and recover from the surroundings, opportunities, and conditions that promote potentially harmful permitted and prohibited substance use in rugby. Collective and coordinated action should be taken to reduce player vulnerability in rugby.

Keywords: dopogenic, psychological stress, rugby, steroids, supplements

Coping by doping?

A qualitative inquiry into permitted and prohibited substance use in competitive rugby

Psychological stress has bearing on sport performers' health, wellbeing, and performance. Particularly salient during experiences of stress are the ways in which athletes cope with stressors. For many years, researchers (e.g., Lazarus & Folkman, 1984) have highlighted that stressful appraisals have the potential to lead to both adaptive and maladaptive coping such as seeking social support, drug and alcohol misuse, diet control, and re-adjustment of goals. The cognitive-motivational-relational theory (CMRT; Lazarus, 1999) is one theory that has been widely applied in sport to develop understanding of psychological stress and, in particular, coping. The CMRT is based on a transactional conceptualization of stress (see Lazarus & Folkman, 1984) and describes coping as dynamic "cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus, 1999, p. 237).

In sport, the CMRT and other relevant theories (e.g., transactional stress theory, Lazarus & Folkman, 1984; the theory of challenge and threat states in athletes, Jones, Meijen, McCarthy, & Sheffield, 2009) have been used to develop knowledge of the stressors experienced (e.g., Evans, Wadey, Hanton, & Mitchell, 2012) and coping strategies used (e.g., Didymus & Fletcher, 2014; Doron & Martinent, 2017) by athletes. Collectively the findings of this research highlight that high-level athletes experience more stressors than recreational athletes (e.g., Arnold, Fletcher, & Daniels, 2016), that efforts to cope can be both individual and dyadic (Staff, Didymus, & Backhouse, 2017), and that coping can be adaptive or maladaptive (e.g., Giacobbi & Weinberg, 2000). Despite a compelling theoretical suggestion that potentially detrimental behaviors (e.g., prohibited substance use) could be employed during attempts to cope, this is yet to be the focus of academic attention.

To date, the use of permitted (e.g., third party tested food supplements, painkilling

drugs) and prohibited (e.g., anabolic-androgenic steroids) substances in sport has not been explored using psychological stress as the conceptual lens. Instead, the theory of planned behavior (TPB; Ajzen, 1985) is the dominant theoretical approach that has been used to guide research on doping over the last two decades (Backhouse, Whitaker, Patterson, Erickson, & McKenna, 2016). The prominence of the TPB is arguably limiting the discovery of a better explanation of the complexity of doping behavior, and we echo calls made by Sniehotta and colleagues (2014) in the health-related arena to retire the TPB from the anti-doping field. We argue that there is an urgent need for integration of stress and doping literature because empirical research has indicated that athletes are vulnerable to the use of prohibited substances when managing the physical and mental demands of training and competition (for a comprehensive synthesis of the social psychology of doping in sport, see Backhouse et al., 2016). Specifically, athletes are more likely to use these substances if they experience periods of personal distress and evaluate their resources as insufficient to meet the demands of the situation (Petróczi & Aidman, 2008; Petróczi, 2013). In this deficit situation, the use of a prohibited substance is a functional choice behavior (Petróczi, 2013), rather than a deviant act (Aubel & Ohl, 2014; Hauw & Mohamed, 2015). Use is justified on the grounds that it 're-stabilizes' (Overbye, Knudsen, & Prfister, 2013) the situation by helping athletes return from injury (e.g., Engelberg, Moston, & Skinner, 2014), 'keep up' with their peers (e.g., Pappa & Kennedy, 2013), recover from training (Whitaker, Backhouse, & Long, 2017), and succeed in a win-at-all-costs sporting system (Mazanov, Hemphill, Connor, Quirk, & Backhouse, 2015) where precarious and high risk working conditions prevail (Aubel & Ohl, 2014; Hauw & Mohamed, 2015; Overbye, 2018).

Although Lazarus (1999) emphasized that there are no universally appropriate or inappropriate ways of coping, in the context of global anti-doping policy and practice, the use of prohibited substances to cope with sport based or personal stressors contravenes the rules

of sport. Beyond posing a threat to the integrity of sport, the ripples of doping (Erickson, Backhouse & Carless, 2016) can result in physical (Franke & Berendonk, 1997; Kanayama, Hudson, & Pope, 2008) and psychological harm (Georgiadis & Papazoglou, 2014; Kirby, Moran, & Guerin, 2011) to the sanctioned athlete. These ripples spread widely and can have long-term personal, social, and financial implications for athletes who have been denied a sporting moment (e.g., podium placing at a major event) due to others' doping behavior (Erickson et al., 2016). Yet, pre-occupation with individual decision-making behavior within the context of doping in sport, coupled with the constructed and stigmatizing 'cheating narrative' of doping (Tamburrini, 2006), constrains our understanding of its behavioral context (Kirby et al., 2011; Lentillon-Kaestner & Carstairs, 2010). This limits the evolution of anti-doping policy and practice as an evidence-based field (Backhouse et al., 2016).

Team sports are rarely the focus of research on doping behavior and doping-related factors despite their global popularity (Sekulic et al., 2016). In one rare qualitative study of this nature (Whitaker et al., 2017), rugby league players and track and field athletes corroborated the assertion that athletes are more vulnerable to doping during periods of instability (e.g., Kirby et al., 2011; Mazanov, Huybers, & Connor, 2011; Overbye et al., 2013). For the rugby league players, a lack of career options available to some players was a source of distress that resulted in them fearing sport retirement due to over-reliance on athletic identity and income from their sport careers (Whitaker et al., 2017). In another study, an analysis of sanctioned cases in rugby union highlighted players between the age of 18 and 25 as an "at-risk" group for doping, and cautioned that a reliance on chemical assistance, particularly at a young age, may leave rugby players vulnerable to doping in the future (Whitaker & Backhouse, 2016). This same study called for further research into the social and cultural conditions that rugby players who use prohibited substances negotiate. This is important given that rugby had one of the highest percentages of adverse and atypical

findings (i.e., the presence of prohibited substances or methods) in doping control test results across individual and team sports between 2003 and 2015 (Aguilar-Navarro, Muñoz-Guerra, del Mar Plara, & Del Coso, in press).

Besides its theoretical relevance, research using psychological stress as the conceptual lens to explore permitted and prohibited substance use with athletes can serve as a platform for new lines of enquiry. Such research may also have important applied implications for targeted and tailored doping prevention, particularly when taking potential protective and vulnerability factors into consideration. The current study responds directly to these ideas, and to calls for research to be sport-specific (Mohamed, Bilard, & Hauw, 2013) by exploring permitted and prohibited substance use when coping with stressors among a sample of rugby players. Further, we aimed to study players' perceptions of vulnerability to and protection from coping via such use.

Methodology and Methods

Our Values and Guiding Philosophy

As researcher-practitioners, we value research that is useful, usable, and used (Boaz & Hayden, 2002). Our research program is underpinned by our commitment to making a positive difference to the communities we serve and, in doing so, helping those communities of people to feel valued and supported. In line with our values, we use our own and others' work to develop policy and practice related to sporting integrity and athlete welfare (anti-doping, psychological wellbeing, and stress management). We conduct research *with* people rather than *on* them and our researcher-practitioner roles provide opportunities for us to regularly hear the voices of those who this research is most relevant to (i.e., athletes, coaches, policymakers). The impetus for this project was our growing frustration with the dominant cheating narrative in doping research and practice, and the finger pointing toward athletes as 'bad apples' who dope in isolation. These accounts prevail despite the burden of the World

Anti-Doping Code resting on the shoulders of athletes. In our experience extant research and policy do not accurately reflect the complex, dynamic nature of doping behavior or the systems that athletes train and compete in. Taking these points together, we believe that by using psychological stress as a theoretical lens, we can instigate a seismic shift in narrative to one that acknowledges stressful transactions as promotors of anti-doping rule violations.

This research was informed by our social constructionist epistemological position, in which we assume that knowledge and meanings are constructed as we engage with the world we interpret (Crotty, 1998). In simple terms, constructionism refers to shared generation of knowledge and meaning. With reference to ontology, we adhere to a relativist view of reality (Lincoln, Lynham, & Guba, 2011). Our reflexive stance allows us to maintain a position of thoughtful self-awareness (Doyle, 2013; Holloway & Biley, 2011; Woodby, Williams, Wittich, & Burgio, 2011) and to acknowledge our subjectivity (Sparkes & Smith, 2014) when constructing knowledge. We maintained reflexive journals (Etherington, 2004) throughout the project, attempted to keep reflexivity "alive in moment-to-moment interactions" (Doyle, 2013, p. 252), and kept our minds open to the unexpected (Doyle, 2013). From project conception to the current point in time when we are engaging with comments from peer-reviewers, we recorded seemingly pertinent information (e.g., our thoughts, biases, and interpretations) in our reflexive diaries. These musings served as helpful points of reference throughout the research as we worked to discover meaning in the data, develop our skills and capabilities, and make a useful contribution to knowledge.

Research Quality

In line with our ontological and epistemological stance, we have a non-foundationalist view of research quality. Thus, we see criteria for judging the quality of research as flexible characterizing traits that are chosen based on appropriateness for the project being judged (Sparkes & Smith, 2014), and based on their harmony with our values and aims as

researchers. For this study we ask that our research be viewed in light of the following criteria: worthy topic, coherence, rich rigor, credibility, and significant contribution (Smith & Caddick, 2012). With reference to a worthy topic, the high percentage of adverse and atypical findings in doping control tests in rugby (Aguilar-Navarro et al., in press) and the significant number of anti-doping rule violations in rugby in the United Kingdom (U.K.; Whitaker & Backhouse, 2016) underscore the need to understand permitted and prohibited substance use among rugby players. The worthiness of this project is also framed by an increased focus on athlete welfare following the publication of an independent report by Baroness Grey-Thompson into the duty of care that sport has towards its engagers (Department for Digital, Culture, Media and Sport, 2017). We achieved coherence by synergizing the extant evidence base with our findings and our lived experiences of anti-doping policy and practice, and by the recursive and reflexive nature of our analyses. The theoretically driven nature of this research, through the application of CMRT, contributes to rigor. In line with contemporary views of enhancing the quality of qualitative research (e.g., Smith & McGannon, 2018), rich rigor was supported by the presence of two 'critical friends' who are experts in qualitative research and who supported us during various aspects of the project. We shared our reflexive journals with these critical friends to facilitate conversation about and enhancement of our thoughtful engagement with the data. Amongst other things, these discussions helped us to ascertain which meanings and concepts within the data resonated most deeply with the players (e.g., by considering hyperbolic phrases or emphasis of voice). Collectively, we have been conducting research in the contexts of stress and doping in sport for over 25 years and drew on our theoretical and applied experiences when interpreting the data to enhance rigor. We employed several techniques to augment credibility, including the use of NVivo (version 11; QSR International Pty Ltd., 2016) to maintain an audit trail of our analytical procedures and decisions, discussions of each player's interview transcript with that player, and

presentation of the findings as thick descriptions. Theoretically, practically, and methodologically our research has sought to make an authentic and significant contribution to the theoretically constrained field of doping in sport.

Interviewees

To be eligible for participation in this study, players needed to be willing to discuss their experiences of psychological stress and permitted and prohibited substance use in a candid manner during an interview. Criterion-based sampling (Patton, 2015) was used to recruit women and men who were competing in rugby league or rugby union at national level one or above in the U.K. We focused sampling on the recruitment of players who had sufficient information power (Malterud, Siersma, & Guassoral, 2016), rather than aiming for a minimum or maximum sample size. In accordance with Swann, Moran, and Piggott (2015), sampling individuals based on their standard of playing performance is relevant when the aim is to recruit those who are expert performers in their sport. This was the case in the current study given the literature that highlights stressors as more commonplace among higher level athletes (e.g., Arnold et al., 2016) and the prevalence of permitted and prohibited substance use among competitive rugby players (Whitaker & Backhouse, 2016; Whitaker et al., 2017). Eleven players volunteered to take part (rugby league n=7, rugby union n=4; women n=3, men n=8) who were between 19 and 28 years of age (M_{age}=22.64, *SD*=2.66 years), had between four and 20 years of competitive rugby experience ($M_{experience}$=11.27, *SD*=5.76 years), and although not purposefully sampled in this way identified as white British.

Interview Schedule

We developed a bespoke semi-structured interview schedule using previous stress (e.g., Didymus & Fletcher, 2017) and doping research (e.g., Erickson et al., 2016), the CMRT (Lazarus, 1999), and the extensive research and applied experiences of the research team (Sparkes & Smith, 2014). The first section of the schedule included open questions about the

players' background and experience, which we asked in a socratic style. This section of the schedule was particularly important for rapport building, especially given the sensitive nature of the subsequent questions. We also facilitated rapport using the fundamental and essential skills and competencies that we have developed as researcher-practitioners. The schedule included core questions that we asked to each interviewee, clarification questions that could be used if an interviewee's answer was unclear, and probing questions that aimed to encourage elaboration. The development of the schedule was led by our guiding philosophy, which meant that the schedule included both structure and flexibility to facilitate co-construction of knowledge between us and the players (Roulston, 2010). We piloted the schedule with two retired rugby players (one man and one woman) who were not included in the final sample. Subsequently, we added elaboration (e.g., "what stressors stand out for you?" and "what else do you remember?") and clarification probes (e.g., "what was that like?") to the interview schedule to encourage depth of discussion. The final schedule contained questions relating to five areas: players' experiences of stressors (e.g., "Tell me about the stressors that you have experienced"); permitted and prohibited substance use as a way of coping (e.g., "What are your thoughts about substance use as a way to cope with stressors?"); factors that protect players from using permitted and prohibited substances to cope with stressors (e.g., "What stops you from using permitted and prohibited substances to cope with stressors?"); factors that may render athletes vulnerable to coping via permitted and prohibited substances use (e.g., "What circumstances or situations might encourage you to use permitted and prohibited substances to cope with stressors?"); and the interview experience (e.g., "Is there anything we haven't talked about that you would like to discuss?").

Procedure

Following approval from a local research ethics coordinator at our institution, we first contacted gatekeepers at local rugby clubs to share details of this study. If permitted, we then

contacted rugby players individually via electronic mail. This communication detailed the purpose of the study, what participation in the study would entail, potential risks and benefits of participation, and ethical considerations (e.g., right to withdraw at any point in time and without reason, confidential participation), and invited individuals to contact us if they wanted to take part. We then contacted players who expressed an interest in participating to arrange a convenient date, time, and location for an interview, and sent each player a copy of the interview schedule. All of the interviews were conducted by the first named author and, at the start of each one, the player was asked to confirm that he or she understood the purpose and procedure of the study and was happy for the interview to continue. Each player signed an informed consent form before beginning the interview, which was recorded using a password encrypted digital voice recorder. At the end of each interview, NVivo (version 11; QSR International Pty Ltd., 2016) was used to maintain a reflexive journal.

Data Analysis

We applied a combination of inductive and deductive reasoning, or abductive reasoning (e.g., Patton, 2015), during the analyses. This approach allowed us to construct new meaning (inductive) while using the purposefully chosen theoretical framework (CMRT; Lazarus, 1999) as a lens through which this meaning was constructed (deductive). In this study, we first used the abductive approach to inductively analyze the data and then integrated deductive reasoning as our analyses progressed. Throughout the analyses we moved recursively and dialectically between the interviewees' subjective experiences and theoretical explanations of the CMRT. In addition to this approach being useful to address our research aims, it sat well with our values and beliefs as researchers. Our movement between inductive and deductive processes allowed us to drive the analyses with the voices of the interviewees while avoiding reinvention of already discussed and published ideas.

As soon as possible after each interview, we used Microsoft Word® to create one

transcript for each audio file. We used transcription pedals to transcribe verbatim the words that we and the players shared during the interviews. We also recorded significant pauses and emphases in our discussions using ellipses and bold typeface respectively. We then transferred the transcripts to NVivo (version 11; QSR International Pty Ltd., 2016) and recursively conducted six phases of latent level reflexive thematic analysis: 1) familiarization with the data, 2) generating inductive codes, 3) generating initial themes, 4) reviewing the themes alongside CMRT-related theoretical concepts (Lazarus, 1999), 5) defining and naming themes, and 6) producing this manuscript (see e.g., Braun & Clark, 2006, 2012, 2019; Braun, Clarke, Hayfield, & Terry, 2018). During the familiarization phase, we listened and re-listened to the audio files and then read and re-read the transcripts to ensure that we were familiar with each player's account of his or her experiences. Our listening and reading helped us to immerse in the data and fed into the second phase of analysis, which involved generating codes. During this coding phase, our aim was to attach descriptive labels to parts of the transcripts that were relevant to the aim of the study and represented underlying meaning or an important concept. We coded at a latent level to try and access the meaning in our data, used NVivo to assist with coding, and assigned a different color to groups of codes to help visualize the data. The next phases of our analysis involved grouping codes into subthemes and themes and reviewing the themes with the CMRT in mind. When grouping, we coded patterns of talk around meaning and similar underlying concepts. During these latter stages of the analyses, we had in-depth discussions with each other and our critical friends to ensure that the ways in which we were grouping the data stayed true to the players' accounts. These discussions also helped to ensure coherence between the raw data and our interpretations. Once we had captured the themes among our codes, we defined and named each one. This involved us exploring multiple iterations of our theme definitions and names, and multiple visits to earlier phases of the analyses as well as sections of raw data. This

reflexive approach helped us to deliberately and thoughtfully explore the meaning in our data by analyzing both organically and recursively and staying true to our ontological and epistemological assumptions (Braun & Clarke, 2019).

The first named author conducted the initial stages of the analyses before exploring various interpretations of the data during face-to-face discussions with the second named author. During these discussions we aimed to generate collaboratively constructed understanding of the data and to explore various meanings and central organizing concepts within the data that represented the intersection of our theoretical assumptions, analytical skills, and the data themselves (Braun & Clarke, 2019). Naturally, we were not in search of "correct," "accurate," or "reliable" interpretations of the data but those that were creatively constructed and remained true to the players' accounts.

Results

The analysis facilitated our construction of codes that represented the players' experiences of permitted and prohibited substance use when coping with stressors, and their perceptions of vulnerability to and protection from coping via such use. These codes were grouped into subthemes and then into three overarching themes: cognitive and behavioral efforts to manage rugby and life stressors, transactional conditions and attributes that protect rugby players from prohibited substance use, and interacting factors in rugby cause dopogenic environments in which players are vulnerable to prohibited substance use. The results are presented as quotes from the interviewees and our supporting narrative that illustrate each theme. To protect the players' identities, the data are presented with pseudonyms and with some contextual information removed from the quotes.

Cognitive and Behavioral Efforts to Manage Rugby and Life Stressors

This theme was generated from the patterns of talk related to consideration of (i.e., cognitive) or actual (i.e., behavioral) use of permitted and prohibited substances to cope with

stressors. We constructed eight subthemes that each represented a stressor that the coping strategies were used in relation to: game outcomes, injury, peer pressure, pressure to perform, selection, the crowd, University, and weight and size expectations. Of these eight subthemes, four appeared to resonate most deeply with the interviewees: injury, pressure to perform, selection, and weight and size expectations. Speaking first to the injury subtheme, the players discussed five permitted and prohibited substance based coping strategies: contemplation of a magic pill to recover from injury, using alcohol and recreational drugs to cope with injury, using recreational drugs during injury rehabilitation, using permitted and prohibited substances due to a lack of support during injury rehabilitation, and using permitted and prohibited substances to decrease injury recovery time. For example, Anika discussed her willingness to 'try anything' as well as her purchase of a 'magic cream' to mitigate a lack of support during injury (cruciate ligament strain) rehabilitation:

> I'll try anything and it's kind of like what I said, like a magic cream almost. It seems too good to be true but I thought I would just try it and see what happens . . . I mean I sort of looked into it and looked at the ingredients and things and it looks safe enough, but I don't really know what it is . . . obviously if I had lots of support [for my injury] then part of that support would be . . . they would like potentially tell you what to eat, what kind of performance enhancing type things that you might do. But I'm kind of left to my own devices.

In another example, Lewis perceived the threat of detection via doping control to be low during injury rehabilitation, which fueled his discussions relating to the use of prohibited substances to decrease injury recovery time:

> I mean, again, it's the history of rugby, players coming back from injury, you know you're injured so you're not going to get drugs tested because they know you're injured. So . . . it's a time period there where you can abuse it and I have known

> people who have used, you know, they have done drugs. Just to get themselves back fitter, obviously, you know hGH [human growth hormone] is a common one . . . to get over an injury quicker and come back stronger, so, you know, it's massive in rugby players.

Turning to pressure to perform, this was a regularly discussed stressor that was associated with eight permitted and prohibited substance based coping strategies: using alcohol as an escape tactic, to facilitate sleep, and to remain calm the night before a game; and using permitted and prohibited substances to avoid losing, cope with pressure to perform, facilitate training and match performance, get stronger, and speed up recovery from training. In the following example, Jordan discussed his ingestion of a risky pre-workout supplement to assist his rugby training and, in doing so, acknowledged his ingestion of a product that might have contained a prohibited substance:

> Yeah there's stuff like pre-workout and everything like that which is just a big surge of energy it gives you . . . the one I used was called Ritual. Yeah, pre-workout brands are like crazy . . . I didn't know [what was in it], which is very silly of me. I did read the label and it specifically said it might contain banned, like substances that are banned in certain sports and it's always going to be in rugby.

Another player, Antonio, spoke about his use of multiple food supplements to cope with a need to get stronger from an early age:

> I was like 'oh, okay, we'll start next week. We'll get everything [protein, creatine] in and then start training.' Yeah, I just did it. Which was weird I think but I saw fairly good results from that for someone who was 15 [years old].

Turning to the subtheme that focused on coping with selection, the players reported three different permitted and prohibited substance based coping strategies: using permitted and prohibited substances to gain a competitive advantage, help make the team, and remain

selected. For example, Dave discussed potential permitted and prohibited substance use to maximize his chances of being selected:

> If you're not in the team then you want to get up to where people are. So, you'll change whatever to try and get to where the people are. If you know that someone is in the team and is doing [permitted and prohibited substances] then . . . you'd do the same thing and hopefully get where he is.

In another example, Lewis spoke about the use of permitted prescription painkillers (Tramadol) among rugby players to cope with selection-related stressors:

> Tramadol, you know, that's a big one in rugby players and it's been abused a lot recently. It turns people aggressive . . . because they're not getting their fix, they get aggressive, they rely on it after games because their bodies are sore. A lot of rugby players are relying on that, which, you know, is purely because they want to get in [the team] and they want to get fit. So, there is a massive link, massive link [between stressors, coping, and permitted and prohibited substance use].

Weight and size expectations was the most commonly discussed stressor that resulted in permitted and prohibited substance based coping strategies. The codes within this subtheme related to using permitted and prohibited substances to adjust weight, get bigger, shred fat, and supplement diet. In the following quote, Steve spoke about his use of creatine and protein supplements to get bigger: "When it comes down to creatine and protein . . . if it's decided that you need to gain weight or gain size, you'll go on creatine."

In a lengthier discussion, Jordan talked about his struggles with self-diagnosed muscle dysmorphia, his thoughts about needing to get bigger, and his resulting permitted and prohibited substance based coping:

> It's just the whole thing of getting big . . . it's that unsettled muscle dysmorphia really, where you just don't think, you're never big enough really. Which is the same with

> most of the rugby lads if you talked to them . . . they'll say 'I'm not big enough' or 'I need to get bigger'. Because there is always that, I'll say it's the male dominant thing of being as big as you can . . . I mean there's not a lot of pressure to drink protein shakes and stuff like that [but] it helps. It's meant to help anyway.

In another interview, John spoke of his and his two friends' discussions about experimenting with steroids to see how big they can get and cope with a perceived need to build body mass:

> It was me and two of the boys I lived with . . . we all kind of joked with the idea and we were enjoying the fresher lifestyle. They're both a lot bigger than me and we kind of joked with the idea being like 'oh, it'd be really funny, see how big we can get' . . . and then we actually got onto the whole discussion being like 'do you think it would actually help us rugby wise?' Then it became quite serious; serious considerations of 'oh, we could actually play to quite a high level if we start taking this stuff.' So, yeah. I think that was sort of the first time I considered steroids.

Transactional Qualities That Protect Rugby Players

We defined this theme as conditions and attributes that aided the players in refraining from using prohibited substances to cope with stressors. The presence of multiple protective factors formed a 'safety blanket' for players, which helped them to draw on adaptive and permitted coping strategies during stress transactions. This theme included 10 subthemes: anti-doping rules, beliefs, culture of rugby, financial costs of doping, lack of education, medical implications, parents, persona, practicalities, and professionalism. Four of these subthemes (anti-doping rules, medical implications, parents, and persona) appeared to resonate most deeply with the players. Anti-doping rules, for example, was made up of four codes that each related to some aspect of anti-doping policy that protected players from using prohibited substances as a means to cope with stressors: risk of being banned from rugby, risk

of being caught, perceived stigmatism associated with drug use, and substances being listed as banned or illegal. In this quote, Steve talked about the protective role of anti-doping rules and the WADA prohibited list:

> If banned substances weren't banned, more people would take them because everyone wants to be the best. If they weren't illegal obviously they'd be legal so then people would take them . . . whether it be steroids or whatever you use, if it became legal, people would use them because it would advantage them in some way and everyone's always looking for the advantage to win.

The medical implications of using certain products and substances were also discussed as a protective factor in the context of coping with stressors. We constructed five codes within this subtheme that related to digestive problems, headaches after taking pre-workout substances, health problems associated with cycling off steroids, medical implications of taking beta-blockers, and the potential of accidental death from drug use. In the following quote, John speaks about the health problems that he experienced after taking a pre-workout supplement:

> I mean you feel like you could wrestle a bear or something. Obviously, you couldn't but you kind of, you do feel like I'm really, really strong, I'm really energetic. You have terrible come downs off pre-workout though. Normally I got really bad headaches . . . the only time I took it was before a gym session and I had a really terrible come down after the gym session.

In another interview, one male player spoke candidly about their understanding of the health problems associated with cycling off anabolic-androgenic steroids:

> If you come off obviously your protein reception will go down, and your hormone levels will go completely out of sync as well because your body becomes dependent on the synthetics that you're injecting. So then you can get, you hear about the rumors

> of guys nuts like shriveling up and stuff like that, and I know your body does become dependent on it but that's where there's post-cycle therapy . . . it's like rehab for heroin; you don't just go one day 'oh I'm going to stop.'

Parents appeared to be an important protective factor for some of the players who participated in this study. The three codes within this subtheme referred to parents being open about drug use, parents having a strong anti-doping stance, and the risk of disappointing a parent. In the following quote, Antonio speaks about the risk of disappointing his parents and how this risk protects him from using prohibited substances as a coping strategy: "My parents. Yeah, I mean I enjoy playing rugby too much to give it away . . . [using illegal substances] wouldn't go down well with people around me."

Aspects of athletes' persona also resonated as important protective factors. The three codes in this subtheme related to being happy without rugby, having a moral compass, and having strong anti-doping values. Anika speaks in the following quote about having 'anti-drugs' values and about relaxing these values when she was injured and no longer competing in rugby. At the time of her interview, she was one year into injury rehabilitation:

> I think it's down to the individual and your principles really, your moral values. I'm just totally anti-drugs . . . I like rave music and going out and stuff and quite a few of my friends take drugs and I know that but I would just never go there . . . I'm totally against it, I just don't see the point and I think it's through stupidity. Even protein supplements and stuff. Like I'm taking protein supplements just now while I'm injured but I didn't take them during the time that I was competing.

Interacting Factors Cause Dopogenic Environments and Render Players Vulnerable

We defined this theme as the physical, cognitive, emotional, social, and cultural conditions of the sport of rugby that rendered the players vulnerable to using prohibited substances when coping with stressors. The theme included nine subthemes: culture of rugby,

education, finances, health, lack of drug testing, practicalities, respect gains, role models, and willingness to experiment. Four of these subthemes appeared to be most relevant to the players' experiences. The culture of rugby contained the following three codes: alcohol use is commonplace, bigger is better, and supplement use is commonplace. For example, Jason spoke about supplements being commonplace in rugby: "Yeah, it's the done thing . . . [club] hand out protein when you go [to training]. Second training session they asked me if I wanted anything . . . they have a range of stuff they give out." In another example, Emma spoke about the culture of rugby and how this led her to use protein shakes and creatine when trying to improve her game and demonstrate her commitment to making the team: "I don't really take that much but . . . it's an easy way to show people that you're trying to do all the right things to make the team."

We constructed three codes within the education subtheme: learning about steroids and supplements, believing that prohibited substances are acceptable if used properly, and uncertainty about what ingredients supplements contain. In the following quote, John talks about the way in which his self-driven education has influenced his outlook on steroid use:

> I've kinda grown through education, like that Dave Crossland thing . . . [it's] kind of cliché but I think you should just learn about what you're putting in your body. It's your choice, isn't it? . . . the media put the onus on steroids that they're so terrible and crap for everyone. They're not actually, they're just…before you make statements like that, maybe educate yourself.

Turning to a perceived lack of drug testing as a vulnerability factor, we constructed three codes within this subtheme. Namely, increased temptation when drug testing is absent, infrequency of drug testing, and using prohibited substances when injured because drug testing is absent. In this example, Steve shares his thoughts on getting away with using prohibited substances during injury rehabilitation due to a lack of drug testing:

> When you're injured you don't tend to get tested for illegal stimulants so it's easy to get away with it . . . So, people can either bulk up or become more powerful, stronger, quicker, or whatever the aim is. You can use certain stimulants to do that.

The final pertinent subtheme within the vulnerability factors theme was role models. The eight codes within this theme were: athletes in other sports, coaches, doctors, nutritionists, older players, parents, sponsors, and teammates. In this quote, Ron speaks about other players who have come back strong from injury and, in doing so, acted as prohibited substance use role models during his own injury rehabilitation:

> There's a lot of people who have taken illegal stuff . . . peptides and growth hormone. Players are backing it to say that, you know, because your body's under so much stress, the contact sessions, your body can't physically take it for the recovery time, for how much you train. I've seen a lot of people who I play with who have done it and you do see how much it improves their game off the field as well as on the pitch.

In another example, John speaks about his parents' use of recreational drugs and the

> I think for our parents' generation, they were young and the whole LSD thing was coming in so they're more open to it. I mean, I've had conversations with my mum, and she's told me she's done cocaine a few times, which, well, to be honest with you, I don't care. I think that's quite open from her. But then it's kind of weird that she'd have a problem about other drugs…even if it was for good reason, bulking up, getting back from injury . . . if I told her about steroids, she'd be like what are you doing, you're taking steroids? That's fine but what are you putting coke up your nose for?

Discussion

The aim of this study was to explore permitted and prohibited substance use as a way

to cope with stressors among a sample of rugby players. Further, we studied players' perceptions of vulnerability to and protection from coping via substance use. The findings highlight the stressors that the competitive rugby players deemed pertinent during their considerations of and willingness to use various permitted and prohibited products as a way of coping. These stressors can create moments of vulnerability in players' careers that should be considered carefully in future research and practice. The findings also point to a range of protective factors that may guard against doping, which offers an important contribution to knowledge given the vulnerability that rugby players may experience. Collectively, these findings offer new insight to doping by moving away from the prevailing social-cognitive perspective and toward a situated-dynamic approach (Hauw & Mohamed, 2015) that considers doping as an outcome of psychological stress. Thus, the focus and findings of this research represent a notable shift away from the 'doping as cheating' narrative (Tamburrini, 2006) that has dominated the literature to date. This is important because a change in the narrative of anti-doping to one that acknowledges athletes as vulnerable people in a dopogenic environment that promotes anti-doping rule violations (Backhouse, Griffiths, & McKenna, 2018) might lessen the stigma associated with doping in sport and break down the culture of silence in rugby (see Whitaker, Backhouse, & Long, 2014). In doing so, people are likely to speak more candidly about their personal difficulties and begin to more freely discuss any wrongdoing they may witness.

Our findings highlight that stressors relating to injury, pressure to perform, selection, and weight and size expectations in particular triggered the use of permitted and prohibited substances as a coping option. According to the CMRT (Lazarus, 1999), coping is partially dependent on an individual's appraisal of a stressor. During secondary appraisal, for example, individuals evaluate their coping options and the perceived constraints in the options that are available to them (Lazarus, 1999). It is possible, therefore, that the rugby players in this study

perceived that their only (or one of few) option for coping was by using permitted and prohibited substances. Thus, our findings support the notion that permitted and prohibited substance use to manage the negative outcomes of stressors can be considered a functional choice behavior (Petróczi, 2013), rather than a deviant act (Aubel & Ohl, 2014). Researchers would do well to explore the specific roles of primary and secondary appraisals during stressful periods when athletes may be particularly vulnerable to coping via prohibited substance use. Such explorations should aim to understand the links between athletes' primary appraisals (e.g., challenge, threat, harm, benefit) and permitted and prohibited substance use; to examine athletes' secondary appraisals in relation to substance use; and to study the factors (e.g., personality, culture, gender) that influence appraisals, permitted and prohibited substance use, and other potentially harmful forms of coping (e.g., alcohol misuse, diet control).

The CMRT (Lazarus, 1999) also posits that perceptions of control are important when an individual evaluates their coping options; if a stressor is viewed as being within an athlete's control, problem-focused coping is likely to ensue. While those who adopt a transactional conceptualization of stress acknowledge that there are no universally effective or ineffective coping strategies, sport psychology researchers (e.g., Eubank & Collins, 2000) have often favored problem-focused coping as a more effective or adaptive strategy than avoidance coping, for example. Our findings make an original contribution to theory and practice by pointing to permitted and prohibited substance use as a way for athletes to directly address stressors and, thus, that some types of problem-focused coping not only pose risks for athletes' health and wellbeing but, in cases where the substances consumed are prohibited, violate the rules of sport.

The use of permitted supplements provides one of the strongest positive correlates of doping intentions and behaviors (Ntoumanis, Ng, Barkoukis, & Backhouse, 2014). The

current study points to rugby being a fertile ground for early habituation and normalization of food supplement use, which is problematic given the questionable efficacy of products on the market and the real risk of inadvertent doping from product contamination and adulteration (Maughan et al., 2018). Pre-workout supplements are a particular cause for concern because such products have an elevated risk of containing unlabeled and harmful ingredients (e.g., Martinez-Sanz et al., 2017). The players who contributed to the current research reported use of pre-workout supplementation and negative side effects, which suggests they may be at risk of unintentionally ingesting prohibited and health risky substances. It seems, therefore, that providing better support to players to help them assess the need, risk, and consequences of food supplement use is paramount if we are to protect rugby players' careers, health, and wellbeing (Maughan et al., 2018).

Athletes may become vulnerable to using prohibited substances and methods when they perceive that they are unable to cope with the demands of sporting life (Backhouse et al., 2018). In this study, our constructionist position to studying players' experiences of the social and cultural conditions of rugby captured a dopogenic environment (Backhouse et al., 2018) where permitted and prohibited substance use was commonplace, users were often naive to their effects or risks, the prevailing norm that bigger is better rested on the shoulders of the players, and the use of permitted and prohibited substances was perceived to be an indicator of commitment and dedication to making the team. Importantly, our findings also show that some stressors (e.g., weight and size expectations) were more closely linked with permitted and prohibited substance use than others. Initiatives are, therefore, needed to change the culture of rugby and to develop adequate player coping repertoires that do not involve the use of risky food supplements and prohibited substances, such as anabolic-androgenic steroids and hGH. Individually coordinated, monitored, and managed training and competition loads are also needed to protect players from negative consequences and to promote long-term

athlete development (see also Phibbs et al., 2018). The role of coaches in creating unrealistic size and weight expectations for rugby players should also be carefully considered, and players need a comprehensive approach to food supplement education alongside support from qualified dieticians and nutritionists. Without such interventions players are vulnerable to alternative, and potentially less rigorous, sources of information.

Little is understood about how athletes develop strategies to manage chronic stressors (e.g., injury) but our findings suggest that rugby players may resort to prohibited substance use when all other coping options have been exhausted and or they have a lack of support during stressful periods. Thus, our findings highlight the need to ensure that players can cope with setbacks in adaptive ways instead of coping via the use of potentially harmful and prohibited substances. This may require environments to be restructured so that stronger support mechanisms are in place when players acquire injuries. These mechanisms should include access to qualified sport psychologists, strength and conditioning coaches, physiotherapists, doctors, rehabilitation specialists, and supervision or mentoring that focuses on engaging rugby players during periods of vulnerability (see also Aubel & Ohl, 2014).

In addition to providing additional resource, athlete support personnel need to be aware that permitted and prohibited substances may be used for reasons beyond gaining a performance advantage. These include permitted and prohibited substances being used as a coping mechanism to manage the stressors (i.e., returning from injury, insufficient recovery time) and expectations (e.g., body size and stature, permitted and prohibited substance use as an indicator of sporting commitment) of sport. The use of painkillers (e.g., Tramadol) to switch off the body's protective mechanism of pain was highlighted as commonplace among the players we spoke to. In view of UCI's decision to ban the drug in cycling and preserve riders' health and safety (Union Cycliste Internationale, 2019), rugby should take note of our findings when reviewing their relevant policies and practice. Sport psychology practitioners

who work with rugby players could also help raise awareness of functional alternatives to prohibited substances when returning from injury and should be sensitized to the notion that injured players are emotionally vulnerable and may have questionable emotional integrity during the rehabilitation period (Forsdyke, Smith, Jones, & Gledhill, 2016). This risk period represents an ideal time for tailored and targeted brief clean sport interventions to help protect players from using prohibited substances and methods during moments of vulnerability. Similarly, psychologists could work proactively with players to equip them with skills to develop their psychological readiness for training so that they do not need to use pre-workouts to get "up" for training. Alongside psychologists, our findings corroborate and extend previous research (Erickson, McKenna, & Backhouse, 2015) that highlights parents as protective agents for athletes but also agents who may increase athlete vulnerability. Players in this study did not want to disappoint their parents by using prohibited substances but this constraint was lessened when parents modelled behaviors that contravene the rules of the game (e.g., one parent was suggested to have used cocaine). Finally, harnessing the power of social media to challenge the perception that sport commitment is signaled through risky supplement and prohibited substance use is encouraged. This message should be reinforced by the actions of athlete support personnel.

With our reflexive stance in mind, it is important to consider strengths and limitations of this work. Of the many strengths that we hope readers perceive, we deem it pertinent to highlight one relating to generalization in qualitative research. Given the ways in which we have presented (i.e., via thick quotes), analyzed (i.e., informed by the CMRT), and discussed our findings, we suggest that they offer both naturalistic (Stake, 1978, 1995) and analytical generalization (Lewis, Ritchie, Ormston, & Morrell, 2014). By mentioning the ways in which our findings can be generalized, we hope to help dispel the misunderstanding that qualitative research lacks generalizability (Smith, 2018). Another strength relates to the deep ethical

issues with which we grappled during this research. As experienced researcher-practitioners, we focused on building trust and rapport with rugby players during the early stages of player recruitment and data collection to facilitate feelings of psychological safety (Edmondson, 2018). This was particularly important given the sensitive nature of our research aims and our request for strangers to discuss, amongst other legitimate performance enhancement strategies, their experiences of prohibited substances. A persistent challenge in anti-doping research is the issue of social desirability whereby those who contribute to research may be reluctant to admit certain beliefs or behaviors. Whilst the players who we worked with discussed permitted and prohibited substance use in rugby candidly, they may not have been completely open about personal or peer use of prohibited substances given the doping-related code of silence that exists in rugby (Whitaker et al., 2014). We did, however, take careful steps (e.g., by avoiding stigmatizing and judgmental language in our participant information sheet) to create non-judgmental and safe spaces for sincere conversation. Our personal experiences of training and working with athletes who have used prohibited substances helped us to create these spaces because we have been sensitized to the fact that athletes are not necessarily bad people or 'dirty cheats' as has been suggested in some stakeholder (e.g., print and digital media, general public) discourse. Rather, our understanding of sport as an exceptional and sometimes risky working environment (Overbye, 2018), frames our perceptions of athletes as potentially vulnerable human beings. It is important to acknowledge that our findings offer a window of insight to a sample of U.K. based rugby players who each identified as white British, and that we did not explore subtleties in stress and doping between men and women. Future research could sample players in different countries and cultural contexts to learn more about the nuanced negotiation of sport, health, and performance, and the links between psychological stress and doping behavior. Researchers would do well to explicitly consider gender during future investigations of stress

and doping, and could explore rugby players' use of non-performance enhancing substances when coping with competitive, personal, and organizational stressors.

To conclude, the social psychology of doping in sport is a growing research area that aims to learn more about how athletes negotiate personal, social, and cultural barriers and enablers of doping free sport. Our findings highlight that competitive rugby players perceive permitted and prohibited substance use as a coping option, particularly when experiencing stressors relating to injury (e.g., cruciate ligaments strain), pressure to perform, selection, and weight and size expectations. Factors that protected the players from using prohibited substances when coping with stressors included anti-doping rules, medical implications of prohibited substance use, parents, and players' personas. However, rugby culture, education, perceived lack of drug testing, and role models were factors that rendered the players vulnerable to prohibited substance use as a method of coping. This is the first study to apply the CMRT to the exploration of permitted and prohibited substance use in sport, and the findings have significant implications for policies and practices that protect the rights and welfare of rugby players. They justify moving beyond the cheating narrative of doping in sport to recognize that athletes may have diminished capacity to anticipate, cope with, resist, and recover from the surroundings, opportunities, and conditions that promote potentially harmful substance use in rugby. In moving beyond individual player culpability, there is a need to take collective and coordinated action on the dopogenic environment that is promoted and reinforced in rugby. Simply informing rugby players of anti-doping rules and regulations in an attempt to deter prohibited substance use will not suffice. We need to intervene to prevent stressful transactions that push players towards prohibited substance use.

References

Aguilar-Navarro, M., Muñoz-Guerra, J., del Mar Plara, M., & Del Coso, J. (in press). Analysis of doping control test results in individual and team sports from 2003 to 2015. *Journal of Sport and Health Science*. https://doi.org/10.1016/j.jshs.2019.07.005

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg, Germany: Springer.

Arnold, R., Fletcher, D., & Daniels, K. (2016). Demographic differences in sport performers' experiences of organizational stressors. *Scandinavian Journal of Medicine and Science in Sports, 26*, 348-359. https://doi.org/10.1111/sms.12439

Aubel, O., & Ohl, F. (2014). An alternative approach to the prevention of doping in cycling. *International Journal of Drug Policy, 25*, 1094-1102. https://doi.org/10.1016/j.drugpo.2014.08.010

Backhouse, S. H., Whitaker, L., Patterson, L., Erickson, K., & McKenna, J. (2016). Social psychology of doping in sport: A mixed studies narrative synthesis. Commissioned Report for the World Anti-Doping Agency. Available at: https://www.wada-ama.org/sites/default/files/resources/files/literature_review_update_-_final_2016.pdf

Backhouse, S. H., Griffiths, C., & McKenna, J. (2018). Tackling doping in sport: A call to take action on the *dopogenic* environment. *British Journal of Sports Medicine, 52***,** 1485-1486. https://doi.org/10.1136/bjsports-2016-097169

Boaz, A., & Hayden, C. (2002). Pro-active evaluators: Anabling research to be useful, usable and used. *Evaluation, 8*, 440-453. https://doi.org/10.1177/13563890260620630

Braun, V., & Clark, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-01. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2012). Thematic Analysis. In H. Cooper (Ed.), *APA handbook of*

research methods in psychology, vol 2: Research designs (pp. 57-71). Washington, DC: APA Books.

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*, 589-597. https://doi.org/10.1080/2159676X.2019.1628806

Braun, V. V., Clarke, V., Hayfield, N., & Terry, G. (2018). Thematic analysis. In P. Liamputtong (Ed.), *Handbook of research methods in health and social sciences* (pp. 834-860). Singapore: Springer.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. London, United Kingdom: Sage.

Department for Digital, Culture, Media and Sport. (2017). Duty of care in sport review. Retrieved from https://www.gov.uk/government/publications/duty-of-care-in-sport-review

Doron, J., & Martinent, G. (2017). Appraisal, coping, emotion, and performance during elite fencing matches: A random coefficient regression model approach. *Scandinavian Journal of Medicine and Science in Sports, 27*, 1015-1025. https://doi.org/10.1111/sms.12711

Doyle, S. (2013). Reflexivity and the capacity to think. *Qualitative Health Research*, 23, 248-255. https://doi.org/10.1177/1049732312467854

Didymus, F. F., & Fletcher, D. (2012). Getting to the heart of the matter: A diary study of swimmers' appraisals of organisational stressors. *Journal of Sports Sciences, 30*, 1375-1385. https://doi.org/10.1080/02640414.2012.709263

Didymus, F. F., & Fletcher, D. (2014). Swimmers' experiences of organizational stress: Exploring the role of cognitive appraisal and coping strategies. *Journal of Clinical Sport Psychology, 8*, 159-183. https://doi.org/10.1123/jcsp.2014-0020

Didymus, F. F., & Fletcher, D. (2017). Organizational stress in high-level field hockey: Examining transactional pathways between stressors, appraisals, coping and performance satisfaction. *International Journal of Sports Science and Coaching, 12*, 252-263. https://doi.org/10.1177/1747954117694737

Edmondson, A. C. (2018). *The fearless organization: Creating psychological safety in the workplace for learning, innovation, and growth*. Hoboken, NJ: John Wiley & Sons.

Engelberg, T., Moston, S., & Skinner, J. (2014). The final frontier of anti-doping: A study of athletes who have committed doping violations. *Sports Management Review, 18*, 268-279. https://doi.org/10.1016/j.smr.2014.06.005

Erickson, K., McKenna, J., & Backhouse, S. H. (2015). A qualitative analysis of the factors that protect athletes against doping in sport. *Psychology of Sport and Exercise, 16,* 149 - 155. https://doi.org/10.1016/j.psychsport.2014.03.007

Erickson, K., Backhouse, S. H., & Carless, D. (2016). "The ripples are big": Storying the impact of doping in sport beyond the sanctioned athlete. *Psychology of Sport and Exercise, 24*, 92-99. https://doi.org/10.1016/j.psychsport.2016.01.010

Etherington, K. (2004). *Becoming a reflexive researcher.* London, United Kingdom: Jessica-Kingsley.

Eubank, M., & Collins D. (2000). Coping with pre- and in-event fluctuations in competitive state anxiety: A longitudinal approach. *Journal of Sports Sciences, 18,* 121-131. https://doi.org/10.1080/026404100365199

Evans, L., Wadey, R., Hanton, S., & Mitchell, I. (2012). Stressors experienced by injured athletes. *Journal of Sports Sciences, 30,* 917-927. https://doi.org/10.1080/02640414.2012.682078

Forsdyke, D., Smith, A., Jones, M., & Gledhill, A. (2016). Psychosocial factors associated with outcomes of sports injury rehabilitation in competitive athletes: A mixed studies

systematic review. *British Journal of Sports Medicine, 50,* 537-544. https://doi.org/10.1136/bjsports-2015-094850

Franke, W. W., & Berendonk, B. (1997). Hormonal doping and androgenization of athletes: A secret program of the German Democratic Republic government. *Clinical Chemistry, 43,* 1262-1279. Available from https://clinchem.aaccjnls.org

Georgiadis, E., & Papazoglou, I. (2014). The experience of competition ban following a positive doping sample of elite athletes. *Journal of Clinical Sport Psychology, 8,* 57-74. https://doi.org/10.1123/jcsp.2014-0012

Giacobbi, P. R., & Weinberg, R. S. (2000). An examination of coping in sport: Individual trait anxiety differences and situational consistency. *The Sport Psychologist, 14,* 42-62. Retrieved from https://journals.humankinetics.com/tsp

Hauw, D., & Mohamed, S. (2015). Patterns in the situated activity of substance use in the careers of elite doping athletes. *Psychology of Sport and Exercise, 16,* 156-163. https://doi.org/10.1016/j.psychsport.2013.09.005

Holloway, I., & Biley, F. (2011). Being a qualitative researcher. *Qualitative Health Research,* 21, 968-975. https://doi.org/10.1177/1049732310395607

Jones, M., Meijen, C., McCarthy, P. J., & Sheffield, D. (2009). A theory of challenge and threat states in athletes. *International Review of Sport and Exercise Psychology, 2,* 161-180. https://doi.org/10.1080/17509840902829331

Kanayama, G., Hudson, J. I., & Pope, H. G., Jr. (2008). Long-term psychiatric and medical consequences of anabolic–androgenic steroid abuse: A looming public health concern? *Drug and Alcohol Dependence, 98,* 1-12. https://doi.org/10.1016/j.drugalcdep.2008.05.004

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, 205-224. https://doi.org/10.1080/19406940.2011.577081

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York City, NY: Springer.

Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. New York City, NY: Springer.

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. https://doi.org/10.1111/j.1600-0838.2009.00885.x

Lewis, J., Ritchie, J., Ormston, R., & Morrell, G. (2014). Generalising from qualitative research. In J. Ritchie, J. Lewis, C. McNaughton Nicholls, and R. Ormston (Eds.), *Qualitative research practice* (2nd ed) (pp. 347-366). London, United Kingdom: Sage.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N. K. Denzin and Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (pp. 97-128). Thousand Oaks, CA: Sage.

Malterud, K., Siersma, V. D., & Guassora1, A. D. (2016). Sample size in qualitative interview studies: Guided by information power. Qualitative Health Research, 26, 1753-1760. https://doi.org/10.1177/1049732315617444

Martínez-Sanz, J., Sospedra, I., Ortiz, C., Baladía, E., Gil-Izquierdo, A., & Ortiz-Moncada, R. (2017). Intended or unintended doping? A review of the presence of doping substances in dietary supplements used in sports. *Nutrients, 9*, 1093. https://doi.org/10.3390/nu9101093

Maughan, R. J., Burke, L. M., Dvorak, J., Larson-Meyer, D. E., Peeling, P., Phillips, S., . . . Engebretsen, L. (2018). IOC consensus statement: Dietary supplements and the high-performance athlete. British Journal of Sports Medicine, 52, 439-455.

https://doi.org/10.1136/bjsports-2018-099027

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*, 106-110. https://doi.org/10.1016/j.jsams.2010.06.003

Mazanov, J., Hemphill, D., Connor, J., Quirk, F., & Backhouse, S. H. (2015). Australian athlete support personnel lived experience of anti-doping. *Sport Management Review, 18*, 218-230. https://doi.org/10.1016/j.smr.2014.05.007.

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. *Montenegrin Journal of Sports Science and Medicine, 2*, 21-25. Retrieved from http://www.mjssm.me/?

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

Overbye, M. (2018). An (un)desirable trade of harms? How elite athletes might react to medically supervised 'doping' and their considerations of side-effects in this situation. *International Journal of Drug Policy, 55*, 14-30. https://doi.org/10.1016/j.drugpo.2017.12.019

Overbye, M., Knudsen, M. L., & Pfister, G. (2013). To dope or not to dope: Elite athletes' perceptions of doping deterrents and incentives. *Performance Enhancement and Health, 2*, 119-134. https://doi.org/10.1016/j.peh.2013.07.001

Pappa, E., & Kennedy, E. (2013). 'It was my thought . . . he made it a reality': Normalization and responsibility in athletes' accounts of performance-enhancing drug use. *International Review for the Sociology of Sport, 48*, 277-294. https://doi.org/10.1177/1012690212442116

Patton, M. Q. (2015). *Qualitative research and evaluation methods*. 4th ed. Newbury Park, CA: Sage.

Petróczi, A. (2013). The doping mindset – Part 1: Implications of the functional use theory on mental representations of doping. *Performance Enhancement and Health, 2*, 153-163. https://doi.org/10.1016/j.peh.2014.06.001

Petróczi, A., & Aidman, E. (2008). Psychological drivers in doping: The life-cycle model of performance enhancement. *Substance Abuse Treatment, Prevention, and Policy, 3*. https://doi.org/10.1186/1747-597X-3-7

Phibbs, P. J., Jones, B., Roe, G., Read, D., Darrall-Jones, J., Weakley, J., et al. (2018). The organised chaos of English adolescent rugby union: Influence of weekly match frequency on the variability of match and training loads. *European Journal of Sport Science, 18*, 341-348. https://doi.org/10.1080/17461391.2017.1418026

QSR International Pty Ltd. (2016). NVivo: The #1 software for qualitative data analysis [computer software]. Retrieved from: https://www.qsrinternational.com/product

Roulston, K. (2010). Considering quality in qualitative interviewing. *Qualitative Research, 10*, 199-228. https://doi.org/10.1177/1468794109356739

Sekulic, D., Tahiraj, E., Zvan, M., Zenic, N., Uljevic, O., & Lesnik, B. (2016). Doping attitudes and covariates of potential doping behaviour in high-level team-sport athletes: Gender specific analysis. *Journal of Sports Science & Medicine, 15*, 606-615. Retrieved from https://www.jssm.org/

Smith, B. (2018). Generalizability in qualitative research: Misunderstandings, opportunities and recommendations for the sport and exercise sciences. *Qualitative Research in Sport, Exercise and Health*, *10*, 137-149. https://doi.org/10.1080/2159676X.2017.1393221

Smith, B., & Caddick, N. (2012). Qualitative methods in sport: A concise overview for

guiding social scientific sport research. *Asia Pacific Journal of Sport and Social Science, 1*, 60-73. https://doi.org/10.1080/21640599.2012.701373

Smith, B., & McGannon, K. R. (2018). Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology, 11*, 101-121. https://doi.org/10.1080/1750984X.2017.1317357

Sniehotta, F. F., Presseau, J., & Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychology Review, 8*, 1-7. https://doi.org/10.1080/17437199.2013.869710

Sparkes, A. C., & Smith, B. (2014). *Qualitative research methods in sport, exercise and health*. Oxon, United Kingdom: Routledge.

Staff, H. R., Didymus, F. F., & Backhouse, S. H. (2017). Coping rarely takes place in a social vacuum: Exploring antecedents and outcomes of dyadic coping in coach-athlete relationships. *Psychology of Sport and Exercise, 30*, 91-100. https://doi.org/10.1016/j.psychsport.2017.02.009

Stake, R. E. (1978). The case study method in social inquiry. *Educational researcher, 7*, 5-8. https://doi.org/10.3102/0013189X007002005

Stake, R. E. (1995). *The art of case study research*. London, United Kingdom: Sage.

Swann, C., Moran, A., and Piggott, D. (2015). Defining elite athletes: Issues in the study of expert performance in sport psychology. *Psychology of Sport and Exercise, 16*, 3-14. https://doi.org/10.1016/j.psychsport.2014.07.004

Tamburrini, C. (2006). Are doping sanctions justified? A moral relativistic view. *Sport in Society: Cultures, Commerce, Media, Politics, 9*, 199-211. https://doi.org/10.1080/17430430500491264

Union Cycliste Internationale. (2019). Tramadol ban: All you need to know. Retrieved from

https://www.uci.org/inside-uci/press-releases/tramadol-ban-all-you-need-to-know

Whitaker, L., & Backhouse, S. H. (2016). Doping in sport: A case study of UK sanctioned rugby union players between 2009 and 2015. *Journal of Sport Sciences, 35*, 1607-1613. https://doi.org/10.1080/02640414.2016.1226509

Whitaker, L., Backhouse, S. H., & Long, J. (2014). Reporting doping in sport: National level athletes' perceptions of their role in doping prevention. *Scandinavian Journal of Medicine and Science in Sports, 24*, 515-521. https://doi.org/10.1111/sms.12222

Whitaker, L., Backhouse, S. H., & Long, J. (2017). Doping vulnerabilities, rationalisations and contestations: The lived experience of national level athletes. *Performance Enhancement and Health, 5*, 134-141. https://doi.org/10.1016/j.peh.2017.06.001

Woodby, L., Williams, B., Wittich, A., & Burgio, K. (2011). Expanding the notion of researcher distress: The cumulative effects of coding. *Qualitative Health Research*, 21, 830-838. https://doi.org/10.1177/1049732311402095