Investigating anti-doping roles of athlete support personnel working with international disabled athletes in six European nations using the COM-B Model and Theoretical Domains Framework

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ABSTRACT

Objectives: Athlete support personnel (ASP) can play a significant role in protecting the integrity of sport and welfare of athletes. Yet, their perspective on how they proactively contribute to clean sport is rarely considered in anti-doping research. Studies with ASP working in elite disabled sport are rarer still. This study amplifies the voice of ASP working with international level disabled athletes to answer the following research questions: 1) What actions do ASP take in anti-doping? 2) What are the factors influencing ASPs' actions? **Methods:** Individual semi-structured interviews were conducted with 41 ASP (Men n=17, Women n=23, n=1 did not report) in six European countries working as Psychologists (n=7), Mangers/Performance Directors (n=6), Physiotherapists (n=6), Doctors (n= 5), Nutritionists (n=5), Strength and Conditioning coaches (n=4), Agents (n=2), Technical coaches (n=2) and a dual role as a Coach/Manager (n=3) or Coach/Physiotherapist (n=1). Abductive reflexive thematic analysis

was conducted, beginning with inductive coding and development of themes, followed by deductive identification of constructs from the COM-B Model and Theoretical Domains Framework. **Results:** Most ASP shared a narrow repertoire of behaviors that targeted helping athletes avoid 'accidental' doping through medicine and supplement use. However, psychologists' actions addressed a broader range of doping vulnerability factors, such as self-esteem and emotion regulation. Regardless of the exact nature of ASPs' anti-doping roles, behavior appeared to be influenced by ASPs' professional role and identity, as well as ASP operating in performance pressured environments and/or ASP perceiving that doping would never occur among their athletes. **Conclusions:** ASP are primarily concerned with preventing inadvertent doping. This concern aligns with the content of anti-doping education programmes. To reduce the risk of intentional doping alongside inadvertent doping, a more behaviorally informed approach to anti-doping is required where ASP are deliberative agents in the pursuit of clean sport.

INTRODUCTION

There is strong evidence that athlete support personnel (ASP), such as coaches and medical staff, can have a powerful influence on doping and clean sport behaviors [1]. Some ASP have themselves acknowledged their potential anti-doping role in the past (e.g., [2]), and have reported undertaking actions such as educating athletes through formal workshops and informal conversations (e.g., [3]). Other behaviors that have been undertaken by ASP include monitoring athletes (e.g., observe behavior, recognize unusual behavior) and having conversations about what products they use, such as medicines and nutritional supplements [4, 2]. A recent systematic review of coach anti-doping literature [5] concluded that actions are typically infrequent and reactive (e.g., in response to a question from an athlete or a doping incident covered by the media). Yet, research with broader samples of ASP indicate that some behaviors that contribute to doping prevention may be ever-present, as they are embedded in an overall way of working based on a club philosophy [3]. To elaborate, ASP working together in a single sporting environment – a rugby union academy in the UK – suggested that their strongest protective actions were the open, honest and regular conversations they had with players about their development. In addition to variation in frequency of behaviors between studies, some research has signaled that behaviors differ across ASP role (e.g., [6]). Existing evidence points towards medical staff, such as doctors and physiotherapists, being relied upon for anti-doping efforts (e.g., [3, 4]). The current study seeks to build on these initial insights into the influence of professional boundaries/roles by examining behavior across a range of ASP working at an international level within disabled sports.

Insights into the factors underpinning ASP behaviors are currently limited. Nonetheless, it appears that both individual and environmental influences are at play. A review of coach anti-doping literature [5] grouped factors influencing behavior into individual (e.g., knowledge, beliefs) and contextual (e.g., culture [of team/organization/high performance sport]) themes. Findings from research with broader populations of ASP, such as managers, nutritionists, and strength and conditioning (S&C) coaches (e.g., [3, 6]), could also be framed in this way. Individual factors previously identified include actual and perceived knowledge, perceived professional boundaries/remit, and concerns about giving incorrect information. Contextual factors include the presence of others who take responsibility for anti-doping, perceptions that risk is low in their context and a lack of guidance on what to do (including limited understanding of policy-prescribed responsibilities). For the most part, factors identified in previous studies have been acting as barriers to ASP behavior. The current study seeks to build on these findings by investigating both individual and contextual behavioral influences, as well as seeking to identify enablers to ASP behavior.

Although the evidence base for ASP, especially coaches, has grown over time [5], it remains limited in several ways. One of the main limitations relates to population; specifically, coverage of different sex/genders and different sporting contexts. For example, women are under-represented in ASP-focused anti-doping research [3, 7]. In addition, doping research within elite disabled sport is sparse, with some studies focusing specifically on one 'issue' such as 'boosting' (e.g., [8, 9]) or the classification system/process (e.g., [10, 11]). Weber et al. [12, 13] were the first to conduct a social science investigation into perceptions of, and reasons for, doping in elite disabled sport. Through interviews with athletes [12] and coaches [13], they concluded that main risk factors for doping in elite disabled sport appear to be the same as non-disabled sport, namely a complex combination of pressure to win, monetary incentives and 'loopholes' in the anti-doping system (e.g., exploitation of Therapeutic Use Exemptions, uneven testing across contexts). As Weber's study focused only on coaches – a population that ASP anti-doping research in general is dominated by – research with broader samples of ASP working in international disabled sport is needed. Also, as little attention was paid by Weber to the coaches' own behaviors, or the factors that influence their behavior, the current study places its wide range of ASP (e.g., agents, medical staff, managers) at the center of questioning. Specifically, the study will focus on understanding what actions these individuals take (or don't take) and why (or why not).

In addition to limitations around populations studied, ASP research has rarely had a strong theoretical underpinning. Barnes et al. [5] criticized previous coach-based studies for a lack of clarity around their conceptualization of variables/factors of interest, as well as their

narrow focus on individuals making rational (deliberate, planned) choices. In particular, investigations of knowledge and attitude have been dominant. Only a handful of studies (e.g., [2, 4, 7]) have considered the influence of contextual factors (e.g., physical and social environment) or automatic processes (e.g., emotion, habits). Some authors (e.g., [3, 13]) have acknowledged the omission of theory in their ASP studies and provided suggestions for potentially useful frameworks for future investigations. Reflective of the emerging ASP evidence base, these have typically included theories that give attention to both individual and contextual factors, such as social ecological models (e.g., [3, 7, 12, 13]) and meta-theory such as the Capability-Opportunity-Motivation-Behavior (COM-B) Model [14] (e.g., [3, 5, 15]). The COM-B Model addresses some of the limitations of past theory use in anti-doping research, as it shifts our focus from individual blame to collective responsibility and considers automatic (i.e., habitual, impulsive) determinants of behavior alongside rational decision making [1]. Therefore, it was chosen to guide the current study.

According to the COM-B Model (see Figure 1), all three conditions [Capability, Opportunity, Motivation] must be met for any behavior [B] to occur on any given occasion [16]. Each condition can be sub-divided into smaller components using the Theoretical Domains Framework [17]. Capability comprises physical (e.g., skills) and psychological (e.g., knowledge) elements, opportunity relates to physical (e.g., resources) and social (e.g., people) factors, and motivation accounts for both reflective (e.g., intentions) and automatic (e.g., emotions) processes [16] (see Supplementary Materials, Appendix 1 for further detail). The wide range of influencing factors captured by COM-B is one of its greatest strengths [17]. It offers a systematic method to inform comprehensive interventions that are directed towards specific behaviors and influencing factors, increasing the chance of the intervention meeting its objectives [16]. The model has been widely used in several fields, including physical activity promotion (e.g., Active Herts, [18, 19]). In the anti-doping field, the COM-B model has so far been used to guide a global audit of coach anti-doping education [20] and, in combination with TDF, has underpinned a meta-synthesis of barriers and enablers to clean sport behaviors [1]. In related fields, COM-B and TDF have also been invaluable to enhancing understanding of athletes' adherence to nutritional guidance [21, 22] and use of asthma medication by athletes [23].
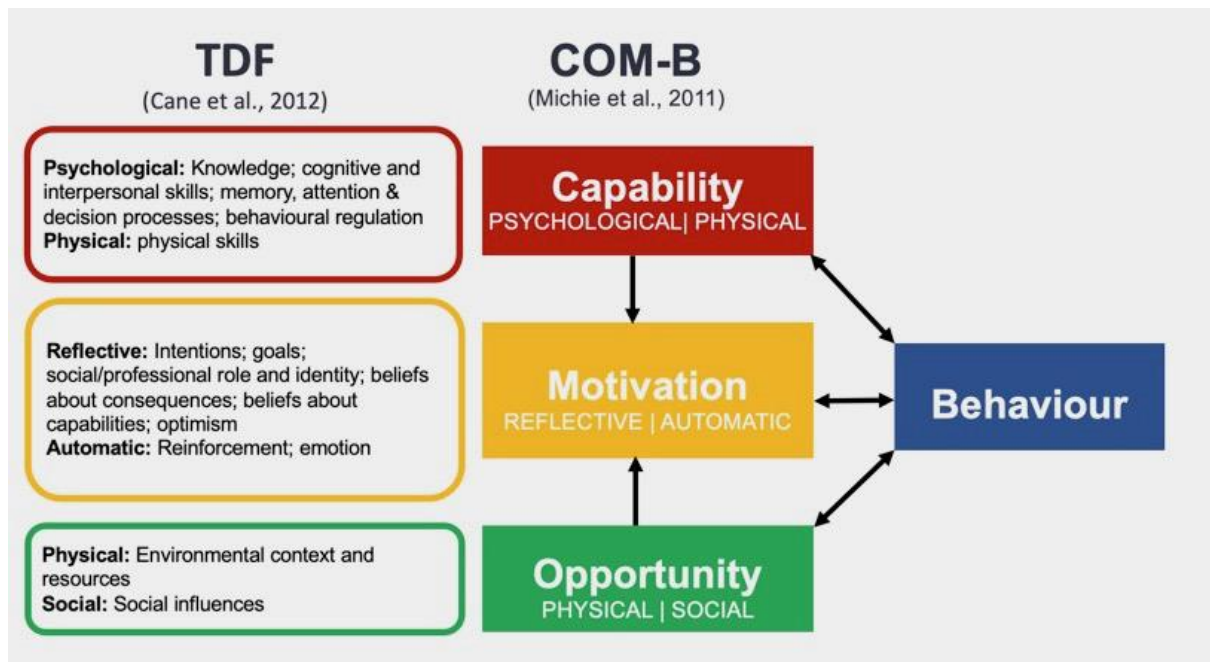
Figure 1. The COM-B Model mapped to the Theoretical Domains Framework (Adapted by Williams et al. [1])

Informed by the existing evidence base, the current study uses the COM-B Model and TDF to investigate the anti-doping roles of a range of ASP working with international disabled athletes across six European countries. Specifically, it sought to answers the following research questions: What actions do athlete support personnel (ASP) take in anti-doping efforts? And, what are the factors (barriers and enablers) that influence ASP behaviors?

METHOD

Participants

Forty-one ASP working in Austria (n=7), Germany (n=6), Ireland (n=7), the Netherlands (n=7), Slovenia (n=7) and the UK (n=7) were interviewed. Both men (n=17) and women (n=23) were included (n=1 did not provide gender information), and individuals represented the following job roles: Psychologist (n=7), Manager/Performance Director (n=6), Physiotherapist (n=6), Doctor (n= 5), Nutritionist (n=5), S&C coach (n=4), Agent (n=2), Coach (n=2) and a dual role as a Coach/Manager (n=3) or Coach/Physiotherapist (n=1). All ASP worked with international disabled athletes, and half (n=22) also worked with non-disabled athletes. Almost half the participants (n=17) worked in a single sport and just over half (n=22) worked in

multiple sports. Across the participants, a wide range of disabled sports were represented, including para-athletics, para-cycling, and wheelchair rugby. We have not provided a full list of sports to avoid deductive disclosure (e.g., as some have limited numbers of ASP). We purposefully recruited ASP working with athletes at international level, as it was believed that these individuals were most likely to encounter doping-related matters (e.g., athletes being tested, competitors being caught doping, themselves having to engage with event-based anti-doping education prior to being a member of support staff at major competitions). The mean age of the participants was 43 (± 13.17) years old and they had 12.85 (± 8.04) years of experience in their role.

Procedures

This study was part of a wider ERASMUS+-funded project managed by the Clean Sport Alliance (CSA; www.cleansportalliance.org). The CSA is a group of academics and representatives of National Anti-Doping Organizations (NADOs) who work together to bridge the gap between research, policy, and practice. While the authors of this manuscript conducted the study, members of the CSA contributed to study design/conception, participant recruitment, securing an interviewer in their country, reflecting on early interpretations of the data, and reviewing a version of this manuscript prior to submission.

When ethical approval for the study had been granted, contact was made with potential participants through a number of channels, including use of personal contacts and emails to sporting organizations (e.g., National Governing Bodies, Olympic/Paralympic committees). All potential participants received an information sheet, explaining the nature of the study and outlining participants' rights (e.g., voluntary participation, withdrawal processes, etc.). Upon expressing their interest in participating, individuals were sent a consent form. This document, and a short demographics form, was completed and returned electronically ahead of the interview taking place. When consent had been granted, a mutually convenient time was arranged for the interview to take place online (due to the global pandemic associated with Covid-19).

A semi-structured interview guide used in previous ASP-focused anti-doping research [2, 3] was updated to align questions more closely to components of the COM-B model [14]. To put participants at ease, each interview began with an informal conversation regarding the individual's experience in their ASP role (e.g., their path to becoming a coach/agent/nutritionist, what their job involves). This enabled the interviewer to understand the participant's role and responsibilities in general, whilst building rapport and trust from the outset [24]. This information also contextualized the subsequent discussions relating to ASP anti-doping roles,

including specific behaviors and influencing factors. Example questions included "What does "clean sport" mean to you?", "Do you play a part in anti-doping/clean sport efforts?", and "What influences your position/anti-doping role?". Questions related to the COM-B model components included "You say you do have a part to play in clean sport efforts, can you tell me more about what you do? (i.e., behaviors/actions this involves), "How motivated are you to engage in clean sport behaviors?", "How prepared (capable) do you feel to engage in clean sport behaviors?" and "Do you have adequate opportunity to undertake clean sport behaviors?".

To enable participants to speak freely in their first language, an interviewer was recruited in each country to undertake data collection. All interviewers had previous experience of this data collection method and were briefed by the first author in advance on the ethical considerations of this project and the content of the interview guide (especially theoretical concepts).

Data analysis

Interviews lasted 60 (± 19.59) minutes, and audio from all conversations was recorded using a Dictaphone to facilitate verbatim transcription. Prior to analysis, data from Austria, Germany, the Netherlands, and Slovenia was translated to English, and all data was anonymized (i.e., names, places, specific details of described incidents were deleted). Abductive reflexive thematic analysis was undertaken [25], whereby themes were inductively generated before concepts from the COM-B model and TDF were identified within each theme. Specifically, the second author familiarized herself with and coded all data, before inductively generating initial themes and subthemes that she interpreted as capturing the central meaning of the ASPs' experiences in relation to anti-doping within their work with international disabled athletes. After this, she reviewed the preliminary themes and subthemes, which she had already provisionally named and defined, to deductively identify any connections between the data and the COM-B Model/TDF. At this stage, the second author shared her full (inductive and deductive) analysis with the first, third and last authors who acted as critical friends [26]. All three critical friends had reviewed the NVivo file containing preliminary codes and themes (where examples of data per code and theme could be sourced), as well as a Word document that summarized each theme/subtheme and noted its connection to COM-B/TDF. In addition, they had immersed themselves in the data by reading/re-reading all interview transcripts. All members of the team engaged in discussions regarding the content of the themes (e.g., in terms of how they were distinct from one another), if the theme name captured the essence of ASP accounts, and the extent to which the themes/subthemes reflected the COM-B Model

components and TDF. Over a series of conversations and revisiting the data, the team constructed three themes that they agreed were the best way to capture and represent central meaning of the ASPs' experiences in relation to anti-doping within their work with international disabled athletes. Although connections had been identified between the content of the themes and components of the COM-B model/TDF throughout the analysis process, the names or shape of the themes were not altered based on the theory.

Results

Three overarching themes were generated through the analysis. The first related to a preoccupation with inadvertent doping that directed ASP clean sport behaviors towards managing athlete medicine and supplement use. The second theme relates to the fact that ASP recognize the importance of protecting clean sport, both personally and professionally, but that the performance-pressured environments they often work in can constrain their actions. Finally, the third theme suggests that ASP behavior is impacted by the fact that ASP find it hard to process that the athletes they work with could dope, and they do not see doping as the biggest threat to the integrity of para sport. The themes and subthemes are illustrated in Table 1, and the connections between these and the components of the COM-B Model and the TDF are identified. All COM-B elements were represented within the data, and features of motivation were apparent in all three themes.

Table 1.

Themes and subthemes, with identified COM-B/TDF constructs and example codes.

Theme	Sub-theme	COM-B construct [TDF]	Example codes within sub-theme
A preoccupation with managing inadvertent doping risk influences actions of ASP.	Controlling the controllable; Managing risks of medication and supplements.	Behavior Motivation [Beliefs about capability]	Check medication and supplements Remind athletes to check medicines and supplements Remind athletes of supplement and medicine risk
	Responsibility for anti-doping defaults to medical staff (for the most part).	Behavior Motivation [Social/professional role and responsibilities]	No role (cluster) Medical role (cluster) Beyond my competence It's a medical person role It's a specialism Seen as medical care Send athlete to experts
	Doping/clean sport is narrowly associated with "taking prohibited methods or substances".	Capability [Knowledge]	What athletes use or put in their bodies (cluster) Natural performance, not artificial Cheating by taking banned substances/methods Taking what's on the Prohibited List

Theme	Sub-theme	COM-B construct [TDF]	Example codes within sub-theme
	Incongruence between ASPs' knowledge/understanding of doping risk factors and ASP clean sport role/behavior.	Capability [Knowledge]	Athlete decision to dope is complex Culture is important for clean sport Clean sport is ethics / integrity Pressures from environment Wanting to win
	Psychologists' actions addressed a range of vulnerability factors.	Behavior Motivation [Social/professional role and responsibilities]	Promoting athlete mental health and well-being Providing space to talk openly Reducing strong athlete identity Supporting athletes' emotional management Supporting athletes through times of vulnerability Injury, Selection
ASP are an untapped source of influence; the environment constrains behavior.	ASP articulated strong clean sport identities.	Motivation [Social/professional role and responsibilities]	Clean sport identity / Integrity driven (cluster). Wanting fair sport Care about equality Working ethically Integrity is important to me Sticking to the rules is important
	ASP care for athlete health and wellbeing.	Motivation [Social/professional role and responsibilities]	Care about athlete health and wellbeing (cluster) Athlete health is important Care about athlete long-term health Not wanting athletes to be at risk of harm Wanting to protect athletes
	"Clean sport" is challenging when sport operates in the "grey area".	Opportunity [Social influences, Environmental context and resource] Motivation [Reinforcement, Optimism, Beliefs about capability,	Performance pressured environment (cluster) Grey area and pushing limits (cluster) Not speaking up Behaviors of other ASP/colleagues Threat/compromise to athlete welfare/wellbeing

Theme	Sub-theme	COM-B construct [TDF]	Example codes within sub-theme
		Beliefs about consequences, Emotions]	
ASP struggle to process the possibility that their athletes could dope (on their watch).	Doping is (apparently) not an issue in para sport.	Opportunity [Environmental context and resource, Social influences]	Doping is a norm [in sport] (cluster) Elite athletes do dope (cluster) Naïve to think otherwise Doping in para sport not as prevalent Benefits are less Less competition Less money Less pressure Lower standard More issue with classification People manipulate the classification system
	Denial that my athletes "could" dope.	Opportunity [Social influences]	My athletes don't dope Don't talk about clean sport (cluster) Athletes won't disclose to me
	Finding out one of their athletes was doping would make ASP question everything.	Motivation [Beliefs about consequences, Emotions, Social/professional role/identity]	Emotional impact if experienced a positive test Positive test would breach trust Positive test can be reflective of me as a practitioner Worried about athlete career Report in house Confront athlete first

Theme 1: A preoccupation with managing inadvertent doping risk influences actions of ASP

ASP appeared to be predominantly concerned with helping athletes avoid the accidental use of prohibited substances. This focus of attention narrowed their repertoire of behaviors towards minimizing risks associated with inadvertent doping through use of medicines and supplements. Actions were especially concerned with checking that things do not contain prohibited substances or supporting (e.g., demonstrating, reminding) athletes to check for themselves. A doctor from the Netherlands explained:

> *If an athlete comes to me...I always ask if they have the Doping Information App. If they haven't, I tell them to install it now. So, I always do that with the athlete. [...] Then I always run through how they should [...] check a substance or check a supplement. Then I always take a look at the medication they have.*

Most ASP seemed capable and confident in their ability to support athletes with minimizing inadvertent doping risks. Yet, drawing on elements of both capability (knowledge) and motivation (professional identity), some ASP suggested that anti-doping efforts require specialist knowledge and expertise. In several instances, ASP described responsibility for anti-doping commonly defaulting to medical staff, namely doctors and physiotherapists. This allowed other ASP – such as technical coaches, S&C coaches, managers, and agents – to be minimally involved in anti-doping efforts. As illustrated by a manager from the UK:

> *...it's like knowing your role...I've got an oversight, but...if anybody comes to me with any concerns or questions regarding supplements or medication, I will always send them on to the expert in that area [e.g., nutritionist for supplements]. I wouldn't say "No, go ahead and take it" .... I always put them on to the experts within the organization.*

Whether doing a lot, or only a little, to help to prevent inadvertent doping, we identified that a key influence on ASP behaviors (i.e., the preoccupation with medicine and supplement use) was the way that they defined doping –or 'clean sport'. For the ASP interviewed, this was primarily related to using (or not using) prohibited substances or methods. Many ASP were focused on what athletes put in their body, given the Prohibited List and the concept of strict liability underpinning the World Anti-Doping Code. The following insights from a German nutritionist reflect this perspective:

> I've had to deal with this over the years, it's about what do I take? What am I getting on my skin? What kind of effects does this have? ...because you have to be careful...I actually see doping very strongly from my area, what do I put in, what do I give out, and so on.

Psychologists were an exception to the preoccupation with inadvertent doping, and they shared a broad array of behaviors that they undertook that may influence doping vulnerability. For example, their actions targeted enhancing athletes' self-worth/self-esteem and emotional control. An Irish psychologist explained how their focus on dual career could help prevent doping:

> ... trying to get them [athletes] to not define their identity by their sport, you know. It should literally, as we said, it should only be one part of their thing. By emphasizing the other aspects of their lives, by emphasizing that the results don't define them, we not only allow them, hopefully, to make better decisions, but we also allow them to perform.

It was interesting to note that while psychologists are targeting these vulnerability factors through their professional support, their actions were not undertaken with the direct and explicit intention to foster clean sport and prevent doping. This quote from a psychologist from the Netherlands illustrates this finding:

> Well, [what I do is] limited in the sense of being involved directly. Of course, indirectly, I am trying to get people back in touch with themselves. With their own emotions, their own self-worth. And as a human being. Which would hopefully make them less inclined to cross the line and dope.

Taken together, the data indicates that the behaviors of ASP were influenced in some part by their professional role, which relates to the social/professional role and identity domain, a facet of motivation within the COM-B Model.

Theme 2: ASP are an untapped source of influence; the environment constrains behavior

The motivation element of COM-B was evidenced strongly within this theme, through the social/professional role and identity domain. For most ASP, the personal importance of clean sport stemmed from their love of sport and belief in fairness. Most ASP expressed a strong disapproval towards doping and shared their frustration towards the negative impact that doping has on sport. From a professional perspective, clean sport was described as important because ASP wanted to protect their reputation as practitioners (which would be compromised if they were associated with doping). In addition, some ASP explained that part of their job was to care about the long-term welfare of their athletes, so clean sport was important because prohibited substances and/or methods can negatively impact the health and wellbeing of athletes. A doctor from Slovenia demonstrated both the personal and professional perspective:

> *...athletes and their long-term health especially, have to be protected. This is mostly where I'm coming from. And also, this foundation of what sport represents should be preserved. It is a fair fight. It's not a tool to cheat.*

Our findings indicate the potential for ASP to be more deliberate agents in anti-doping efforts. In addition to valuing clean sport, ASP were optimistic that they do, or could, make a difference in anti-doping efforts. Further, time was not judged to be a barrier to engaging in behaviors that prevent doping. Yet, a barrier to engaging in protective anti-doping behaviors seemed to be the context in which they worked, including the people around them. Specifically, ASP described performance pressured environments where athletes and ASP pushed the limits and/or worked to the edge of the anti-doping rules for performance and marginal gains (opportunity component of the COM-B). For instance, a German nutritionist described being called upon for nutritional supplements to give athletes an added boost:

> *And then of course, that's where I come into play, the box of tricks of nutritional supplements, because with it I can perhaps give my athletes a little Fritz [boost]...So, you can still reach into your bag of tricks, what works well - and of course I don't tell the others how I do it, but it works (Laughter).*

Notably, some ASP described situations where they experienced discomfort because practices that they were witnessing in the context they were working had the potential to compromise athlete health. This finding was brought to life by a UK physiotherapist when discussing an athlete being given a product which they believed had not been subject to due diligence:

It was a case of..."do it, do it, do it". And that's what doesn't sit comfortable [with me] because that's when people start to make choices that aren't informed, aren't empowered, aren't autonomous. That is the grey [area]. That's how it starts. You're on a slippery slope.

In this instance, the physiotherapist acted by speaking up to try to challenge the behavior of others, but it did not make a difference. Reflecting on this experience they said, *"I was certainly ineffective in terms of challenging back to my line manager. I do remember saying 'it doesn't feel right', he was like 'no, no, it's happening'".* Other ASP acknowledged that they did not even take action (i.e., did not speak up/challenge the behavior of others) because it felt too difficult. Some ASP discussed their belief that their status in the organization might play a part in their ability to challenge others' practice. For instance, several ASP felt unable to say what they thought because they were *'the new kid on the block'* or *'just a freelancer'*. A physiotherapist from the Netherlands explained:

Last year I found out how you can be quite intimidated, by the coaches and everyone getting on top of it all. Because basically, you're the new kid on the block. So, you can't always just say what you really think. So, what your ideals are, they aren't always accepted.

Overall, these findings illuminate the interaction of components of the COM-B model, as behavior (e.g., speaking up) was influenced by ASPs' reflective and automatic motivation (e.g., beliefs about capability, beliefs about consequences) and the social opportunity afforded by the environment within which they were working (e.g., social pressure, power). More specifically, the data highlights complex situations where the personal values of ASP (motivation) can be in conflict with the performance dominated norms of sport (opportunity).

Theme 3: ASP struggle to process the possibility that their athletes could dope (on their watch)

ASP acknowledged that doping happens in elite sport – and they suggested they would be 'naïve' if they thought otherwise. That said, they described the risk as being 'over there'. Firstly, some ASP suggested doping is worse in other countries because less is done to address it. A German manager commented, *"So, from my point of view, everything is completely sufficient [in our country], but I think that in other nations much less is done."* Another example of the ASPs' 'othering' of doping was their suggestion that doping is more common in non-disabled sport because the incentives and pressure are greater than in disabled sport contexts. In this vein, an Austrian coach attributed the different degree of risk to para sport "*lagging behind a bit*". Notably, most ASP also articulated the view that doping in disabled sport contexts is not as bad

as other 'problems', naming intentional misrepresentation (classification manipulation), specifically. A UK S&C coach explained, *"I just don't think it's [doping] as prevalent, but I think cheating the classification system is a bigger issue in para-sport"*. These insights are primarily related to social and physical opportunity, including elements such as social comparisons and the interaction between the person and the context, respectively.

In hand with pointing the finger at other places and people, ASP were adamant that doping would never occur among their own athletes. For instance, an Austrian nutritionist claimed:

> *As far as doping is concerned, I can only say that at least now I have the athletes I work with who actually have nothing to do with it, who also only take what they have to take when it comes to dietary supplements and don't buy so much in bulk, more just having the food-first approach.*

While this type of deflection from their own environment to others is commonplace in anti-doping research (with both athletes and ASP), through our conversations there appeared to be a relational aspect underpinning this denial. In particular, we felt that the denial we were identifying across our interviews might be a protective mechanism, because some ASP believed that becoming aware of doping among their athletes would lead to (their own) disappointment and upset – potentially alluding to aspects of motivation such as emotion and beliefs about consequences. An agent from Ireland illustrated:

> *On a personal level, I think I'd be just absolutely devastated because again it comes down to trust. I am working with people that I feel have integrity and are trying to be the best at what they do by being cl[ean]...so yeah, it would be a real body blow if something like that was to happen.*

Some ASP suggested that discovering one of their athletes had doped, would be a significant breach of trust that could lead them to question everything (e.g., how did they not know, what could they have done differently). A German coach captured these thoughts and feelings well:

> *What did I do wrong? Did I inform him too little or whatever? Did I exert too much pressure? I would reflect on such things myself. And I would say that I am now partly to blame.*

Interestingly this coach, like some other individuals, seemed to feel (partly) responsible for a positive test among their athletes, despite having indicated earlier in the interview that they did not have significant responsibility for clean sport. It is possible that the ASPs' perceptions of being responsible after the event could be connected to them caring for their

athletes, which was evident throughout the accounts of the ASP. Guided by this caring philosophy, most ASP proposed seeking to understand and support an athlete engaged in wrongdoing, rather than immediately reporting them to authorities. Thus, we return full circle to the powerful influence of social/professional role and identity, as a component of motivation.

Discussion

The purpose of this study was to investigate what actions athlete support personnel (ASP) undertake in anti-doping efforts and understand what factors influence ASP behaviors. The interviews revealed that most ASP actions were directed towards minimizing the risk of inadvertent doping, especially checking that products such as supplements or medicines do not contain prohibited substances. Given one of the main aims of doping prevention related to minimizing risks associated with medicine use, it made sense for anti-doping responsibility to default to doctors. Therefore, it was evident that doctors undertook more behaviors than those in other roles, including S&C coaches, agents, and managers. The underpinning reason for this appeared to be professional role and identity. Other important influencing factors were organizational culture (where performance pressures acted as barriers to ASP behavior) and perceptions of low doping risk among their athletes (which were a barrier because they led ASP to believe that taking action was not necessary). The importance of clean sport from a personal (e.g., belief in fairness) and professional (e.g., perception of role as a caring profession focused on athlete welfare) served as enablers for engaging in behaviors that protect clean sport. These findings evidence the potential of ASP to undertake a more prominent and deliberate role in anti-doping efforts.

The finding that behavior is predominantly concerned with inadvertent doping corroborates previous ASP anti-doping research from non-disabled sporting contexts [3, 4]. It also reflects where the emphasis and focus are currently placed across the resources available through anti-doping organizations (e.g., the World Anti-Doping Agency's Education and Learning platform devotes many resources to avoiding an adverse analytical finding through medicine use, the United Kingdom Anti-Doping agency's website has dedicated 'hubs' for Medicine and Therapeutic Use Exemptions and Supplements, respectively). Further, our findings reinforce previous research [3] highlighting the prominence and reliance on medical staff when it comes to anti-doping. Whilst the ingestion of prohibited substances and methods is both an anti-doping rule violation and a serious threat to athlete health and wellbeing, there are further threats that do not appear to be given the attention they may deserve (e.g., complicity). Still, these role-related findings further support previous recommendations that education opportunities and other support offered to ASP should be role-specific [3]. For each

ASP group, desired ('target') behaviors should be agreed upon and an in-depth behavioral analysis should be conducted to establish the main determinants of each action. Agreeing and articulating the behaviors that each member of ASP should enact is an important step in establishing clear responsibilities and role boundaries.

By undertaking this behaviorally focused research study, the importance of enabling all three components of the COM-B model within the context of anti-doping was evidenced. Having the capability (e.g., knowledge) to act was important in several ways. Some individuals reported not having enough knowledge to do more than they currently did. Furthermore, there was an assumption that expert knowledge was required to effectively contribute to anti-doping efforts – and so, that is partly why responsibility often defaulted to medics. As a profession, medics were assumed to have the knowledge to manage risk-minimized medicine use most effectively. Given the variability in anti-doping knowledge previously evidenced with ASP populations (e.g., [3, 5]), calls have been made for enhanced learning opportunities to address issues surrounding knowledge and ensure ASP have the capability to act to prevent doping (e.g., [2]). Therefore, the development and effective implementation of education programmes to increase knowledge and/or understanding amongst ASP is critical [27]. Research [27] also highlights the importance of investing in training for skill development, alongside education to enable professionals' capability to behave in ways that safeguard athlete welfare. Moving forwards, a greater focus must be on ensuring that ASP are clear on what target behavior(s) are expected of them and how to enact the behavior(s).

One of the main enablers of motivation to engage in anti-doping efforts was the ASPs' personal/professional role and identity. Specifically, clean sport was valued by the ASP as they believed in sport being 'fair', they cared for athlete health and welfare, and they wanted to protect their own reputation as practitioners. This corroborates previous findings in non-disabled sport, which almost unanimously demonstrate that ASP have anti-doping beliefs (e.g., [3, 5, 6]). However, demonstrating the complexity of motivation, other elements that were evidenced in the data were beliefs about capability, beliefs about consequences, and reinforcement – all of which were barriers to ASP acting to protect clean sport. Some ASP were unsure that they could/should effectively act and had experienced nothing happening or negative consequences after acting. Notably, the negativity of these factors appeared to stem from the interactions between individuals and their sporting environment (bringing together motivation and opportunity factors of the COM-B Model). Two powerful barriers to ASP engaging in anti-doping behaviors resulting from these interactions were performance pressured cultures the ASP experienced and a perception that anti-doping as irrelevant/unnecessary due to low risk among their athletes.

Our findings show the importance of intervening at an environmental and systemic level, given the evidence of this level of influence on ASP behavior. Previous research with ASP

has shown that individuals around the coach do not encourage or prompt clean sport actions (e.g., [20]) and this study extends our understanding further to show that there are times when ASP wanted to act (e.g., speak up to challenge the practice of colleagues) but did not feel enabled to do so because of others in their environment (often coaches). Behavioral scientists have acknowledged that it is "easy to overlook the physical and social environment when trying to understand behavior, and to focus exclusively on the people whose behavior we are trying to change" ([16], p. 14). Yet, social norms play a pivotal role in human behavior and often "the best way to reshape the behavior is to change the environment" ([16], p. 14). In the present case, reshaping the environment requires a fundamental cultural shift in the priorities and value systems of high-performance sport [28]. Currently, this system is seen by many to prioritize performance over the health and well-being of athletes (e.g., [22, 29, 30, 31]). To address this singular performance focus and elicit behaviors that prioritize athlete health there is a need to change the physical or social context of sport [27]. For example, altering the way that funding operates to reduce performance pressure, and activating modelling behaviors by providing an example for people to aspire to or imitate, including having individuals who hold 'sway' within the sporting community openly talk about the importance of prioritizing athlete health and welfare and describing/demonstrating how they do this. These approaches could be supported with communication and marketing campaigns that signal and reinforce the importance of athlete health and welfare, alongside performance.

In addition to a shift in prioritization and emphasis in high performance sport, there needs to be a focus on addressing the perceived irrelevance of doping, that is hindering ASP in contributing to anti-doping efforts. Deflection of the possibility of doping away from one's own environment towards other contexts is a consistent finding in both athlete (e.g., [12, 32]) and ASP research (e.g., [2, 4, 33]). This is likely because ASP are defining doping in very limited ways. Firstly, they consider the inadvertent doping risk as the greatest risk – and they believe this is being effectively minimized by the actions they or others are taking. Secondly, they consider the intentional use of prohibited substances or methods, and immediately discount this as they inherently believe that nobody that they work with would ever consider doping. However, preventing doping that is caused by something other than a mistake with supplements or medication should be about much more than minimizing the risk of 'intentional cheating'. The psychologists in our study have demonstrated that vulnerability to doping can be reduced through ASPs' every-day practice. Like previous research [3], they illustrated that doping prevention behaviors can be embedded in ASPs' wider role, rather than being explicitly about doping prevention. To achieve greater engagement in behaviors that address vulnerability beyond inadvertent doping, clean sport actions must be more embedded within professional standards, rather than as an 'add on', 'ad hoc', 'tick box' exercise (e.g., [34, 35]). This shift in approach could be achieved by organizations ensuring that education and training to develop

ASPs' capability related to promoting and protecting athlete health and welfare through their every-day actions (such as open and honest conversations around athlete development) is integrated in professional pathways (e.g., degree programmes, certification courses, licensing process). Moreover, clean sport could feature within employment processes, including responsibilities being outlined in job descriptions, discussed at interview stage, embedded within contracts and/or codes of conduct, as well as actions that ASP are taking (or could take) to promote and protect athlete health and welfare being openly discussed during ongoing 'performance reviews'.

Reflections

The findings should be viewed with the strengths and limitations of the study in mind. The main strength related to the sample, which comprised an even balance of men and women and individuals representing a diverse range of nations, sports, and roles. This coverage enabled the identification of differences in experience across roles (i.e., doctors being most active, psychologists addressing a broader range of vulnerability factors). Though, no major differences were identified in the accounts provided by individuals based on any other of these factors. A further strength lied in its theoretical underpinnings, through use of the COM-B Model and TDF. Together, they ensured that a comprehensive range of factors influencing anti-doping behaviors were considered, including the typically neglected physical and social opportunity and automatic elements of motivation. The value of this theoretical approach was evident considering the accounts of the ASP signaled the barriers to anti-doping efforts that were embedded in the physical and social environments experienced by the practitioners. A final consideration is in relation to the use of multiple interviewers. Our intention was to ensure that participants were able to speak freely in their native language, as we believed this would allow them to provide greater depth and richness to their accounts (i.e., having to search for words in English might have hindered their ability to fully describe their thoughts, feelings, and behaviors). However, by having multiple interviewers, it was not as easy to draw upon earlier insights in the data collection process to probe particular barriers and enablers identified by the ASP in more depth.

Conclusion

The purpose of this study was to investigate what actions ASP undertake in anti-doping efforts and understand what factors influence ASP behaviors. The interviews indicated a preoccupation with inadvertent doping, and anti-doping responsibility primarily falling to doctors. For this group, professional role acted as an enabler of behavior, yet it acted as a barrier for other groups, such as agents, managers, and S&C coaches. Despite this, most ASP

showed potential to contribute to clean sport efforts because they placed importance on clean sport from both a personal and professional perspective. To begin to capitalize on this potential, appropriate education and training must be provided to ASP to enhance their capability. Such interventions can only be devised when clarity has been gained regarding what ASP should do and how they should do it. This can be achieved through further research with ASP populations, focusing on each profession individually to ensure that agreed target behaviors are role specific. Indeed, gaining clarity and consensus around the target behavior(s) for each ASP group is essential as the foundation for all other recommendations we have outlined – activities such as education, training, guidelines, and modelling all require (among many other things) to have a clear and measurable target behaviour(s). However, directing intervention activities at the individual level of ASP will only achieve so much; the environmental factors that currently constrain ASP behavior must be addressed if ASP actions are to become truly supported by and embedded within a sport system that prioritizes athlete health and welfare. This requires change on a large scale, that most likely falls outside the remit of any anti-doping organization. However, a first step in this process would be to engage with individuals responsible for decisions around the structure, especially financial elements, of sport to understand why the system is currently structured the way it is, establish 'readiness to change', and/or to identify and barriers and enablers to change.

Contributions

Contributed to conception and design: LP, IB, AP, SB
Contributed to acquisition of data: LP, MB
Contributed to analysis and interpretation of data: LP, MB, TW, SB
Drafted and/or revised the article: LP, MB, TW, AP, SB
Approved the submitted version for publication: LP, MB, TW, IB, AP, SB

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Data and Supplementary Material Accessibility

Further information regarding the connections between the COM-B Model and Theoretical Domains Framework is provided in Appendix 1.

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