Athletes with intellectual impairments and their support personnel: understanding anti-doping policy, provision, and practice

Final Report to WADA

Dr Philip Hurst[1], Professor Jan Burns[1] & Dr Debbie van Biesen[2]

[1]School of Psychology & Life Sciences, Canterbury Christ Church University, Canterbury, United Kingdom

[2]Department of Rehabilitation Sciences, KU Leuven, Leuven, Belgium

Summary

More than 9,000 athletes with an intellectual impairment from over 90 nations are currently registered with the international sport organisation for intellectual impairments (VIRTUS) and compete under the World Anti-Doping Code. Despite this, no research has examined their experiences of anti-doping. Such evidence is important to ensure that current anti-doping policy and practice are accessible and inclusive and reduce the risk of anti-doping rule violations. To address this gap, this multi-study project examined: 1) athletes with intellectual impairments and their support personnel's experiences of anti-doping; and 2) anti-doping stakeholders' perceptions of implementing anti-doping policy and practice for this population.

In Study 1, 10 athletes with intellectual impairments and 16 athlete support personnel agreed to participate in the study. All athletes competed at an international level and support personnel were parents (n = 9), guardians (n = 1) and coaches (n = 6) to an athlete with an intellectual impairment. In Study 2, 8 anti-doping stakeholders working for an international (n = 2) and national (n = 5) anti-doping organisation, or a national sport organisation (n = 1) were recruited to the study. Semi-structured interview were conducted online via Teams for all participants and we used reflexive thematic analysis to analyse the data.

In Study 1, we found that athletes with intellectual impairments valued anti-doping, which helped keep sport fair and ensure clean competition. While they were aware of prohibited substances and doping control, more complex anti-doping policies, such as strict liability, and practices, such as checking medications, were not understood. Anti-doping was associated with "catching the cheats" and many believed that they did not need to be subject to doping control. In fact, some athletes believed that if they were selected for doping control, they did not have to provide a sample and reported confusion, fear and distress once selected. This understanding and experience of anti-doping was related to education being too complex and overwhelming.

In Study 2, an incongruence between anti-doping policy and practice was reported. That is, anti-doping stakeholders revealed a tension between staying compliant with the International Standard for Education and delivering this in practice when athletes could not understand various nomenclatures (e.g., athlete biological passport) and clean sport behaviours (e.g., checking supplements and medications). Participants reported that they did not have the expertise or support to help athletes understand the learning outcomes of their education and found that the bottom-up communication between sport and anti-doping organisations was challenging in gaining support to provide effective anti-doping education to this population. Many therefore mentioned that athlete support personnel (e.g., coach, parent and guardian) were integral to forward key messages in a manner that their athlete understands both within the education session and throughout the season.

Collectively, our data demonstrated an urgent need for changes to anti-doping policy and practice so that they are both compliant with the WADC and meaningfully inclusive for athletes with intellectual impairments. We recommend three changes for WADA and signatories to the WADC. First, doping control personnel must adopt approaches that help athletes with intellectual impairments navigate the doping control procedure. This includes notifying athletes with empathy, allowing extra time, building rapport prior to sample collection, and using clear, simple language to prevent distress. Second, anti-doping education should be redesigned for cognitive accessibility, which is simplified (e.g., jargon removed), shortened (<20 minutes), includes active learning (role play for checking medications), and delivered in small, separate groups (~5 athletes with intellectual impairments). Third, to reinforce and repeat key messages throughout the season and at critical moments (e.g., how check the prohibited status of a medication, how to apply for a TUE, reminding about selection for doping control), it should be mandatory for athlete support personnel to be present during education sessions athletes receive.

Objectives

The objectives of our project were to: 1) examine athletes with intellectual impairments and their support personnel experience of anti-doping policy and practice, 2) determine anti-doping stakeholders perceptions of implementing anti-doping policy and practice for athletes with intellectual impairments.

Literature review

Intellectual impairment is related to limitations in intellectual functioning (e.g., reasoning, problem solving, memory) and adaptive behaviour (e.g., interacting with others, reading, following directions; Schalock et al., 2021) with prevalence estimated to be between 1 and 2% worldwide (McKenzie et al., 2016). Despite facing significant barriers to participation, such as a lack of qualified coaching, the need for additional funded support personnel, and restricted travel opportunities (Darcy & Dowse, 2013; Thomson et al., 2021), many people with intellectual impairments participate in competitive sport. In 2025, more than 9,000 athletes, across over 90 nations, are registered with the international sport organisation for intellectual impairments (VIRTUS), 700+ are fully classified Para-athletes and >150 were registered to compete in the three represented sports (i.e., athletics, swimming and table tennis) at the 2024 Paris Paralympics.

As part of the World Anti-Doping Code (WADC), athletes are bound by anti-doping practices, which can be invasive. Given that athletes with intellectual impairments have cognitive deficits that impact upon their decision making, memory and ability to understand complex information and processes, the WADC (2021) identifies athletes with intellectual impairments as a “protected person” (pp. 174; WADC, 2021). Modifications are therefore given during anti-doping practice (e.g., athletes can be assisted by their representative during doping control). Anti-doping education is not adapted or modified to support athletes with intellectual impairments learning, and it is unlikely that anti-doping practitioners are trained in educating this demographic. Given this, it is reasonable to suggest that these athletes may not receive harmonized, co-ordinated, and effective anti-doping education that

preserves the spirit of sport and protects their health and right to compete on a doping free level playing field.

The broader anti-doping literature reveals that there is often a gap between anti-doping policy and practice. That is, athletes have reported doping control to be conducted unprofessionally, which can result in distrust and dissatisfaction in the legitimacy of anti-doping policy (Overbye, 2016). Other athletes have reported negative experiences with anti-doping practices, such as updating whereabouts, accessing anti-doping websites, and having access to education programmes (Efverström et al., 2016), with some athletes questioning the quality and relevance of material during education programmes, which they suggest could be more engaging and interactive to help them feel more prepared in responding appropriately to a doping related issue (Hallward & Duncan, 2019). Further, the issues of implementing anti-doping policy worldwide has caused inequities and structural injustices for some athletes who do not have access and the support from their international or national organisation (Efverström et al., 2016). In short, these data highlight that the experience of anti-doping practice by athletes may be different than that intended by anti-doping policy. It is currently unknown if the same holds true for athletes with intellectual impairments, and because of the very nature of their impairment they may be even more at risk of non-compliance than other athletes.

Both coaches and involved family members of intellectually impaired athletes play a significant role in the athletes' career. Compared to other impairments groups (e.g., physical impairment), athlete support personnel have a more active role in supporting intellectually impaired athletes, who are more likely to still live in their family home, have family members accompany them to events, and for some, act as a coach. Many athletes are highly dependent on family and coaches for social and emotional support and to help with challenges such as travel, communication, and planning. Therefore, the relationship between athletes with intellectual impairments and support personnel is unique compared to other impairment groups. For appropriate anti-doping practice, a

clear dialogue is needed between all groups to ensure the athlete and their support personnel are adhering to anti-doping policy.

Doping can be defined as a goal-directed and motivated behaviour (Petróczi, 2013a), whereby an athlete chooses to use a prohibited substance. Decision making is therefore fundamental to intentional doping. Even for unintentional doping, where an athlete can fail an anti-doping rule violation through negligence (e.g., an athlete deciding to ingest a sport supplement that is contaminated with a prohibited substance), decision making is at the core. For athletes with intellectual impairments, decision making is often the responsibility of an involved family member or guardian. While research suggests that such family members believe they can guide effective decision making (Saaltink et al., 2012), if a family member is unaware of the anti-doping policy, an intellectually impaired athlete may fail an anti-doping rule violation through no fault of their own (e.g., a family member may administer a medication to their athlete that is on prohibited list).

For both impaired and non-impaired athletes, coaches represent a key social influence on anti-doping decisions. Evidence from a systematic review indicates that coaches have limited knowledge of anti-doping policy, are reluctant to participate in anti-doping practice, and lack confidence in engaging in anti-doping conversations with their athletes (Barnes et al., 2020; Nicholls et al., 2020). This is noteworthy since coaches play a key role in advising athletes decision to dope, shaping attitudes and beliefs towards the use of prohibited substances, and instilling efficacy in athletes to resist doping (Barnes et al., 2020; Boardley et al., 2019). In relation to athletes with intellectual impairments, it is unknown whether coaches have similar perspectives of their anti-doping knowledge and responsibilities. It is likely that coaches to athletes of this demographic may have less opportunities to access formal coaching education and information about anti-doping (Townsend et al., 2015). To ensure a proactive approach to prevent doping in sport, and to advance the field for both anti-doping practice and the broader sports coaching literature, examining coaches' experiences, and understanding of current anti-doping provision is needed.

In sum, there is no research that has examined how athlete support personnel are supporting the anti-doping needs of athletes with intellectual impairments. It is unknown whether they understand current anti-doping practice, how their needs are best addressed and if they are fostering clean sport environments. Such research is important since involved family members make decisions on behalf of athletes with intellectual impairments and coaches can shape athlete's decision to dope. To identify whether practice is meeting its aim in promoting the spirit of sport values and preventing both intentional and unintentional doping, research is needed that examines athlete support personnel's experience and understanding of anti-doping policy, provision, and practice.

Anti-doping practitioners and providers are essential for implementing anti-doping policy and delivering anti-doping practice to athletes and their support personnel worldwide. Such roles, include delivering anti-doping education, chaperoning athletes to doping control and helping with whereabouts. However, to our knowledge, there are very few strategies and guidelines to help support anti-doping practitioners and providers deliver provision and practice to athletes with intellectual impairments, and no research has examined whether they are suitably supported. This is important given that athlete perceptions of anti-doping will be influenced through experiences with anti-doping practitioners and organisations and their capability of implementing policy. Negative experiences may influence beliefs about the legitimacy of anti-doping policy, which may in turn, lead athletes to perceive anti-doping organisations as improper, unjust, and inappropriate in meeting their goals of protecting their right to compete in doping free sport (Woolway et al., 2020).

Prior to the Tokyo 2021 Olympics, the IPC published best practice guidelines for anti-doping control officers for conducting drug tests to athletes with intellectual impairments (IPC, 2021). In this document, practitioners were given "rules" on how to engage those athletes with intellectual impairments, which included adopting communication styles, listening attentively, and strongly recommending for athletes with intercultural impairments to have a representative with them during the sample collection. While such best guidelines exist, it is unknown how feasible it is for anti-doping practitioners to deliver this practice and whether any issues or challenges are experienced.

Very little empirical research has examined the experiences of those delivering and implementing anti-doping policy and practice. From the paucity of evidence, studies have shown that practitioners and providers desire more training and support (Mottram et al., 2008), need more resource and opportunities to develop practice (Patterson et al., 2016), and experience difficulties in collaborating with sport organisations (Gatterer et al., 2020; Patterson et al., 2016). These findings highlight that implementing anti-doping policy can be challenging for practitioners and providers, and they may need more support for delivering practice. Given that athletes with intellectual impairments require further support, it is reasonable to anticipate greater challenges and issues for implementing anti-doping policy and delivering effective provision and practice.

Given the above, in this project, we conducted two studies. In Study 1, we examined athletes with intellectual impairments and their support personnel experiences of anti-doping policies and practices. In Study 2, we interviewed anti-doping practitioners about their experiences of implementing anti-doping policy to athletes with intellectual impairments and how they are support during anti-doping practice.

Methods and methodologies applied

Philosophical assumptions and study design.

In both Study 1 and 2, we employed an interpretivist constructivist approach and conducted cross-sectional, semi-structured interviews to understand participant perspectives of anti-doping. Our research was framed within an ontological relativism (Creswell & Poth, 2016), whereby multiple and subjective realities are assumed, and epistemological constructionism that accepts knowledge is constructed and subjective that are denoted by the meaning participants attribute to their experiences of anti-doping policy and practice. Given our aims, we wanted top ensure the voice of athletes with intellectual impairments is at the centre and as such, an epistemological constructivist approach was deemed most valued, which places emphasis on what participants say, do and feel and how they make meaning of their own experiences.

Participants

In Study 1 and 2, we used a criterion-based purposive sampling strategy (Smith & Sparkes, 2020) to recruit athletes with intellectual impairments, their support personnel and anti-doping stakeholders to the study. Eligibility criteria stipulated that athletes were 18 years or older, English speaking, registered with VIRTUS, competed at an international competition under the WADC and attended an anti-doping education session or had been drug tested. Eligibility criteria for support personnel were similar whereby their athletes needed to compete at an international level and had attended an anti-doping education session or had been drug tested. For anti-doping stakeholders, eligibility criteria stated that participants needed to be responsible for anti-doping policy or practice for a national or international anti-doping or sport organisation.

For Study 1, we recruited athletes and support personnel to the study simultaneously using the following methods. First, calls for participants were advertised on the VIRTUS and our university websites, as well as via social media, such as LinkedIn, Instagram and X. Second, contacts within our own networks (e.g., national and international sport organisations, universities and sport clubs) were

informed about the study and forwarded a call for participants. Third, personal contacts to each author were individually contacted and invited to the study. Finally, for participants who completed the study, they were asked to forward the call for participant advertisement onto others who may be eligible for the study. In Study 2, we used our network within the team invited participants interview via email. Snowball sampling was also used and we asked those who had completed the study to suggest others who may be interested in participating.

Across both studies, potential participants were sent an information sheet, outlining eligibility criteria and the nature of the project, including benefits for participation, what was expected, example questions (e.g., 'Could you tell us your first experience of anti-doping education'), that participation was completely voluntary, and that they could withdraw at any time without repercussion. They were also informed, either directly or via their parent/guardian, that for participation in the research they would receive a £50 stipend as compensation for their time. It was also emphasised that the interview would be conducted in English, and it was important that all participants had full comprehension of this language. We followed Braun and Clarke's (2019) alternative recommendations to data saturation and used the pragmatic approach of considering the richness, quality, complexity of our data and if the data was sufficient to confidently answer our research questions. We 'guestimated' a provisional sample size range for each group (8-15) across both studies, which might attain an appropriate quality of data.

Interview guides

Three semi-structured interviews were created by the research team who have experience researching athletes with intellectual impairments and anti-doping. Given the lack of research into athletes with intellectual impairments and anti-doping, guides were exploratory and broad in nature and centred on three main areas: 1) understanding of anti-doping, 2) anti-doping education, and 3) drug testing. Distinction between guides revolved around the experience of participants. That is, for athletes, questions were focused on their own experiences, support personnel it related to their own

experiences as well as how they perceived their athlete to experience it, and for anti-doping stakeholders around their experience and understanding of anti-doping policy and practice for athletes with an intellectual impairment.

Data collection

Prior to data collection, ethical approval was gained from the lead author's institutional ethics committee. All interviews were conducted online via Microsoft Teams at a time and location suitable to each participant, which were conducted by the lead researcher. Interviews were conducted between April 2023 and April 2024, and interviews lasted between 22 and 38 minutes for athletes, between 46 and 84 minutes for support personnel, and between 47 and 71 minutes for stakeholders. To help build rapport with participants prior to questioning, informal conversations were conducted (e.g., favourite athlete, first sport experience, favourite competition). The interviewer had competed as an international-level athlete and an anti-doping educator, and contributed to informal discussions, such as experiences with training regimes and competitions, or providing anti-doping education. While the interview guide served as a template for the conversation, questions were open-ended and allowed participants to guide the narrative and flow between topics. The interviewer used probes throughout to expand on responses or provide more detail, such as how they felt during doping control, what they liked/disliked about different parts of anti-doping education, or beliefs about anti-doping's importance.

For Study 1, semi-structured interviews with people who have an intellectual impairment often require facilitation to generate rich data. In line with Sigstad and Garrels (2018) recommendations, the lead researcher therefore ensured extra time was given to responding to questioning, used simple language throughout, and repeated questions if needed. Further, the interviewer used paraphrasing to reframe what participants had already reported, which can help them make corrections and complement their statements. Similarly, and to aid participants in structuring the conversation and better remember what had been asked, he also summarised what

was said after each main topic and gave opportunities for the participant to add any further comments. Pilot testing with athletes and feedback from experts in conducting research with intellectual impairments was sought prior to data collection, which helped ensure that questions elicited rich descriptions.

For athletes in Study 1, they were interviewed first, and their support personnel interviewed immediately after. Athletes had the choice to be alone during interviews, but all preferred to have their support personnel with them. While it was stated at the beginning of the interview that support personnel remain silent so that their athlete could express their own experience and understanding of the question, the interviewer emphasised to athletes that they could seek support from them at any time. All athlete support personnel spoke in each interview, which often related to rephrasing the question for clarity or when confirming/correcting a specific event. For example, when discussing an anti-doping event (e.g., doping control or education session), athletes would turn to their support personnel to confirm that the event they were discussing was correct. If support personnel discussed their own experiences at this time, the interviewer interrupted at an appropriate pause and politely stated that they would have the opportunity to explain this afterwards. Support personnel and stakeholder interviews were conducted on their own with the lead researcher.

Data analysis and quality criteria

All interviews were recorded in Microsoft Teams, transcribed verbatim and uploaded to NVvio 12 (QSR International Pty Ltd., 2019). We followed Braun & Clarke's (2019, 2020) reflexive thematic analysis, whereby we used a semantic and inductive iterative approach to analysing the data and provided a descriptive account of athlete experiences of anti-doping. While latent (i.e., implicit and informed by the underlying concepts) and deductive approaches were considered, a semantic and inductive approach was mostly used given the lack of research in this area and to ensure that the voices of participants were directly reported.

The lead author first transcribed the interviews as soon data were collected and immersed himself within each transcript by reading each one multiple times and making initial notes and patterns. Initial codes were then generated by identifying key features or points of interest, before each code was considered in relation to others, whereby some were collapsed, reconsidered, or merged with others to identify higher order themes and lower order themes within the data. This process was conducted iteratively, which began at the outset of data collection and ended once all interviews were conducted. Afterwards, the lead researcher refined themes in consultation with both co-authors during regular meetings to test how well the themes told the story of the data in line with answering the study's question. In one case, the lead author discussed his initial interpretation of anti-doping education being 'overly complicated' and included a number of lower order themes related to formatting of information, length of the sessions and tasks used to increase engagement. Co-authors offered alternative perspectives about whether it was more succinct to address this in one lower order theme that related to the inaccessibility of anti-doping education. Upon reflection and further analysis of data, these initial themes were combined and later labelled 'anti-doping education is complex and overwhelming' and integrated into the higher order theme 'anti-doping is inaccessible and can cause negative emotional responses'. Final refinements were later considered, including defining and refining themes, how they fit within the overall purpose of the research and ensuring that there are clear boundaries between each theme. Finally, the report was written in a manner that ensured the evidence of each theme was concise, logical, coherent, non-repetitive and provided an accurate account of the story indicated by the data. To avoid deductive disclosure, individual participant characteristics are not detailed, such as events, accolades, and sport experience, and a pseudonym is given for each participant's name.

Results

Study 1 – Athlete and their support personnel experience of anti-doping

Twenty-six participants (Table 1 for characteristics) volunteered for the study (10 athletes and 16 support personnel). All athletes were actively competing at an international level, with two classed as 'world-class elite', and eight 'successful elite' (Swann et al., 2015). All had attended anti-doping education and just under half (n = 4) had experienced doping control. Support personnel were parents (n = 9), guardians (n = 1), or coaches (n = 6). For all athletes, we interviewed their support personnel, with three additional coaches interviewed who were not connected to any athletes in the study. To guide the reader through our interpretation of the data, we have grouped our themes into higher and lower order themes (Table 2). A combination of individual quotes and conversational dialogues are presented, and we refer to both athletes and support personnel as 'participants'.

Table 1. Participant characteristics

Characteristic	Athletes (n = 10)	Support personnel (n = 16)
Gender (n)	Female (2), male (8)	Female (8), male (8)
Age in years	23 ± 5	54 ± 7
Nationality (n)	China (1), Denmark (2), Great Britain (4), India (1) and New Zealand (2)	Denmark (2), France (1), Great Britain (6), Japan (1), India (1), the Netherlands (1), New Zealand (2) and USA (2)
Sport/role (n)	Athletics (5), swimming (4) and cycling (1)	Parent (9), guardian (1) and coach (6)
Years competing	11 ± 5	*N/A*

Understanding of anti-doping policy and practice and its importance

In this higher order theme, we focus on athletes' understanding and perceived importance of anti-doping. Four lower order themes were present, which we named 1) Anti-doping is important to stop cheating, 2) Superficial understanding of anti-doping, 3) Diversity of intellectual impairments, and 4) 'Why do I need to be drug tested? I am not a cheat'.

Anti-doping is important to stop cheating. During interviews it was clear that all participants valued the existence of anti-doping and recognised doping as a form of cheating. Athletes expressed

Table 2. Higher and lower order themes

Higher order	*Lower order*	*Transcript example*
1. Understanding of anti-doping policy and practice and its importance	Anti-doping is important to stop cheating	"To ensure fair competition, not just for you, but for your competitors as well" (athlete)
	Superficial understanding of anti-doping	"Just how little and how difficult it is for him to explain. I gotta feeling he knows part of it with drugs but he hasn't gotten the whole sense of it, even though we've been through the education together" (support personnel)
	Diversity of intellectual impairments	"Sometimes it's a love and hate relationship cause some have a ADHD and other character issues as well" (support personnel)
	'Why do I need to be drug tested? I am not a cheat'	"All they know is drugs is the big thing, drug is drug free sport what have you, that is the big thing. But all of a sudden there's this individual that says, listen, you - Mr intellectually disabled, you have to come with us for a drug test and it is like panic straight away panic because they think they are in trouble" (support personnel)
2. Anti-doping is inaccessible and can cause negative emotional responses	The needs of athletes with intellectual impairments are not considered	"They are not protected in any way. If they are, if they have a positive doping test. I don't think that no one will take their mental disability into consideration in in that case" (support personnel)
	The complexity of anti-doping education	"I was trying to like you know, trying to get most of it learned, but it's gone out my brain. It's been like a week" (athlete)
	Consequences of inaccessible anti-doping policy and practice	"They just did not understand … it was a lot of distress, and it took six hours to get a sample. It was quite dramatic and traumatic…It was really, really stressful" (support personnel)
3. Supporting athletes with intellectual impairments	Importance of trained and supportive doping control staff	"I know they're doing their job and keeping us safe" (athlete)
	Creating accessible anti-doping education for those with intellectual impairments.	"Because of the experience they've experienced it, they've done it multiple times. It was good when the famous athletes came along and talked about stuff. That was a good part of it" (athlete)
	Support personnel as anti-doping educators	"He's not got access to the information to make the choices in the 1st place and then to do the checking that lands on us anyway. So we would just shepherd him through the whole of that process" (support personnel)

the belief that anti-doping can '*stop people cheating*' and would help keep '*sport fair*' during competition and they valued to '*always play by the rules*'. Importantly, athletes understood the value of doping control as a means in which to detect those who are gaining an advantage.

Support personnel reinforced their athletes' beliefs about the value of anti-doping in protecting the integrity of sport and spoke about how important this was to '*ensure a level playing field*', which can '*keep sport fair*' and '*ensure clean competition*'. As a result of the perceived importance of anti-doping, there was recognition that their athletes would not dope. Breaking the rules and playing fairly was discussed as fundamental reasons why their athletes would refrain from doping, which could result in negative emotions, such as shame and guilt. When discussing this with Sandra (parent), the importance of following rules was valued in all aspects of their life, both within and outside of sport, and that breaking rules to succeed was unacceptable:

> *Sandra*: Ryan (athlete) just doesn't like breaking rules. You know, if that's for two reasons: It's a rule, not broken. That's just rules. You don't break a rule. And secondly also that you know he would be, you know, seem to be taking something means he could have been had a competitive advantage, and he would understand the wrong in that.

Superficial understanding of anti-doping. Athletes were familiar with the anti-doping policies and practices in place and had a broad understanding of their responsibilities (e.g., do not take a banned substance). However, this understanding was limited to the ingestion of drugs and being tested:

> *Jonathon*: Doping is pills and anti-doping is then whatever you do to avoid the athletes' taking pills. When I was competing, I had to pee in a cup and stuff.
>
> *Damian*: Anti-doping is where you're against the use of performance, PEDs (Performance Enhancing Drugs), in sports. Um… and… Especially anti-drugs in sports.
>
> *Milo*: They do like testing and they test you and that. They come and do tests and pee tests erm… they do bloods as well. It is to stop people from taking like different drugs.

Upon further questioning about doping control, it became clear that some athletes did not differentiate between prohibited and permitted drugs. Instead, they spoke about the need to refrain from taking *all* types of drugs in efforts to avoid committing an anti-doping rule violation. This lack of distinction showed that while athletes were aware of anti-doping being in place to '*catch drug cheats*', it was difficult for them to know which drugs they were and were not permitted to use:

> *Isla (parent)*: He's (Finley, athlete) got it into his head that he can't even take a paracetamol…he won't even take a paracetamol because he thinks it could be banned.

Throughout the discussions, the interviewer identified that athletes did not describe other policies and practices that contribute to anti-doping, such as failure to comply with doping control, whereabouts and reporting incidents of doping. It became clear that beyond drug use and doping control, many were not aware of more complex practices, such as checking whether a dietary supplement needed to be batch tested, if a medication was on the Prohibited List or Therapeutic Use Exemptions (TUE). When specifically asked about these, athletes did not recall or specifically remember what they meant and could not articulate what their responsibilities were. Therefore, athletes' knowledge of anti-doping was evidently related to the superficial use of drugs in sport and doping control, and that other policies and practices beyond these were not remembered or considered.

Diversity of intellectual impairments. During interviews, it was clear that athletes were not a homogeneous group. Differences between athletes were notable in various aspects such as attention, communication, emotional stability, literary skills, comprehension and independence. Support personnel provided further confirmation of this and emphasised that there is large diversity in their characteristics, traits and behaviours, which in turn can make it difficult to help them understand anti-doping:

> *Hazel* (parent) You've got such a variety of impairment. So, you've got your autism, which of course is its own spectrum. You've got your Down Syndrome, which is its own spectrum, and

> then you've got your S14 (para-swimming classification), which are your intellectually impaired, also with its own spectrum. So, as like okay, how best do you address their needs so that they're not, you know, terrified by a procedure that's vitally important to ensure that everybody's competing in the same sort of level, you know?

Given the large variation between athletes, this was recognised as challenging for helping them better understand the anti-doping rules that they are expected to follow. As such, many support personnel emphasised the need to consider such diversity when educating athletes about their anti-doping rights and responsibilities.

'Why do I need to be drug tested? I am not a cheat'. Athletes understood that the doping control procedures were in place to '*stop cheating*'. However, there was confusion as to why *they* needed to be drug tested if they were '*not cheats*'. When being selected for a doping control test, for some, this caused confusion as they knew they had not taken a prohibited substance and questioned why they needed to be tested. In conversation with Michael (coach), he explained that because Milo (his athlete) does not dope, he did not understand why he needed to be drug tested when this is in place to detect those who are doping:

> *Michael (coach)*: So, Milo is pretty aware of the process (drug testing) and is totally aware of the fact that there are things that you shouldn't take because they're not allowed… But I wouldn't have said he had a great awareness of it. He was in [a competition] and he won, at that point we discussed anti-doping, [and] his response was '*why? I don't take drugs*'. And so I think he's an athlete that doesn't have a great understanding of the whole situation.

Anti-doping is inaccessible and can cause negative emotional responses

Within this higher order theme, we recount the perceptions of inaccessibility of anti-doping and the negative emotional responses that can occur. We separated this into three lower order themes: 1) The needs of athletes with intellectual impairments are not considered, 2) The complexity of anti-doping education, and 3) Consequences of inaccessible anti-doping policy and practice

The needs of athletes with intellectual impairments are not considered. A theme consistent between all participants related to the needs of athletes being rarely considered in the creation, implementation, and delivery of anti-doping. That is, while anti-doping education was described as '*very informative*', '*really good*' and '*fascinating*' in helping support personnel understand *their* anti-doping roles and responsibilities, they reported that it was unsuitable for their athletes. Anti-doping education was suggested to have been created to accommodate all athletes, without addressing the needs for those with intellectual impairments:

> *Sophie*: To be honest, the education that the intellectually impaired get is not what they need. It doesn't cover it at all. It doesn't cover. It's supposed to be a one size fits all and isn't.

During anti-doping education sessions, athletes mentioned that they would often attend sessions with other athletes with and without intellectual impairments. Although athletes enjoyed being with others during these sessions, from a learning perspective, having others present hindered how comfortable they felt in the sessions, which in turn affected their engagement and how much information they retained. Having too many athletes in their sessions prevented them from engaging with activities and content, especially during discussion tasks with others, and would frequently experience a loss of concentration and anxiety in engaging with the session. Milo (athlete) explained that when discussions with other athletes began, he would lose concentration given the number of different answers and opinions voiced in the room:

> *Interviewer*: You completed the anti-doping session when you had someone chatting to you. Do you remember what this was like?
>
> *Milo*: Yeah, they were alright…I didn't seem to have any questions because I was just lost like yeah, I got distracted and that with people talking to me.
>
> *Interviewer*: Okay, would you ask a question during the session because you felt lost?
>
> *Milo*: Erm I didn't want to answer any questions because there were too many people like answering the questions at one time.

Support personnel discussed that while their athletes are expected to attend the anti-doping education sessions, '*their needs are not well understood*' by the anti-doping staff who deliver the sessions. This brought many to indicate that, in its current form, anti-doping education is not fit for purpose for meeting the needs of those with intellectual impairments.

Anti-doping education is complex and overwhelming. All participants stated that information presented in anti-doping education sessions was too complex to understand. With the number of layers to anti-doping, support personnel recognised their athletes did not fully understand anti-doping. For example, while athletes understood they were not allowed to take a prohibited substance, they did not know how or why they needed to check the prohibited status of a medication, and if the medication is prohibited, the process in applying for a TUE. As such, when this was delivered in a one-off education session, this made it difficult for athletes to comprehend, which created feelings of being overwhelmed.

Participants spoke about the difficulties in grasping key learning outcomes given the way it was delivered and presented. Often, athletes attended large lectures, akin to a university class, and would sit listening to an anti-doping educator for up to an hour. Support personnel spoke about the large quantities of anti-doping jargon (e.g., strict liability, rule violations, whereabouts), the number of responsibilities they needed to remember (e.g., checking medications, batch testing supplements, reporting doping) and the tasks they were asked to engage with (e.g., order of a drug test, identify the prohibited substance, discussions with other athletes). The following discussion with Finley (athlete) highlights how difficult and overwhelming anti-doping education can be for an athlete with intellectual impairments when there is a lot of information to retain:

Interviewer: Could you tell me a little bit about your first memories of anti-doping education?

Finley: To be honest, don't take this the wrong way, but they were really, really bad and boring.

Interviewer: And why were they really bad and boring for you?

Finley: They put up the screen with loads of the writing of it and they talk in front of it, really. And I'm guessing that the people [educators] were expecting people [athletes] to read these outs in their heads. But to me, I was just listening to it really…. But you're kind of get through a few words, you get the little bits of it you know what I mean.

Interviewer: Yeah, I know what you mean. There is a lot of text on the screen and it can be difficult to follow. Is there anything else about the anti-doping education sessions that you find difficult?

Finley: Well, I can't read well, I can't read. I'm getting there, but not that great and the size, you get one paragraph, then it goes next paragraph [and then] to something else. It's hard finding hard to focus on it and pay attention.

Due to the quantity of information presented in sessions, many athletes found it difficult to retain key learning outcomes where it would go '*in one ear, but then gets jumbled up inside before it goes out the other side*'. Support personnel reinforced this and referred to the education as too '*abstract*', '*long*' and '*technical*', as well as '*very challenging*' to comprehend. It therefore became clear that expectations for athletes requiring to know and understand their anti-doping rights and responsibilities was unattainable in its current format.

Consequences of inaccessible anti-doping policy and practice. Given the inaccessibility of anti-doping education, support personnel expressed concerns that their athlete may be more likely to commit an anti-doping rule violation unintentionally. This was in relation to the notion of strict liability, which underpins anti-doping policy whereby an athlete can commit an anti-doping rule violation without intent or knowledge of doing so. As such, support personnel envisioned their athlete being banned from sport for a reason they did not understand or were aware of. Given the consequences that can follow (e.g., banned from sport for 4-years), support personnel were fearful and anxious of having their athletes comply with anti-doping practice when they do not understand it:

Sienna (parent): They are not protected in any way. If they are, if they have a positive doping test, I don't think that no one will take their mental disability into consideration in in that case. So that's my biggest worry.

Further to the increased risk of committing an ant-doping rule violation, participants reported negative emotional experiences. Athletes expressed that they were '*scared*', '*nervous*' and '*stressed*' for being selected, with support personnel indicating that it caused '*anxiety*', '*panic*' and '*distress*'. Four issues were associated with the negative emotional response of reporting to doping control. First was a feeling of doing something wrong, which was underpinned by a lack of understanding of why athletes had been selected. William (coach) mentioned that his athletes '*thought they were in trouble*' and Curtis (guardian) explained that it was '*because she would think she's already done something wrong*'. Second, the invasive nature of it was identified as reason that caused negative responses given the requirement of urinating in front of another person they had just met. Participants reported that the entire procedure was '*uncomfortable*', '*alien' and 'tense'*, and when Sandra (parent) was asked about the negative responses her athlete experienced, she explained that '*the idea that he has to go to the toilet in front of somebody else, is quite embarrassing*'.

Third, some athletes lived alone and told to not open the door to an unexpected visitor. This is likely to have caused tension between what the athlete had been told *not* to do from their parents and what they were expected *to do* from an anti-doping perspective. As such, irrespective of the decision they made, athletes believed that they were going to do something wrong, which caused feelings of discomfort. Finally, changes of routine were reported to cause negative experiences whereby many athletes wanted routine and structure to their day. Having to unexpectedly report to doping control, either after a competition, training or at home, would often coincide with, for example, training commitments (e.g., warming down) or daily routines (e.g., making dinner). This then resulted in some athletes finding the unpredictability of what was about to happen difficult to cope with as Stefanie (athlete) and her father, Chris, explain:

Stefanie: It was a bit of a shock, actually. I felt like, really like, uncomfortable I did… I didn't like any of it the the anti-doping, so that's fine. It was like quite, quite shocking actually…and then they said 'We have like come to to give like a drug test' … They turned up at my house, something I didn't know. I wouldn't answer the door. If there's somebody at the door, which I don't understand…I don't like answering most of them and I just don't answer it so… The the first time it took a bit longer because it was my my my first time doing it. Plus, I was like we like, I was quite shocked.

Chris: It was quite, uh, traumatic … We got back from training… and then the anti-doping team turned up, so she found it emotionally difficult and tearful… Things that are not planned ahead, she found hard to cope with. So, in lockdown, events have to have been confirmed. She really struggled with [this] because she likes to know what's going on. She's more secure when she knows exactly what's going on and that. She'd like it if I knew when they were coming, it would be better and what she means is to just be prepared for it.

Supporting athletes with intellectual impairments

This higher order theme relates to ways in which athletes with intellectual impairments can be supported during anti-doping practices, which is separated into three lower order themes: 1) Importance of trained and supportive doping control staff, 2) Making anti-doping accessible for those with intellectual impairments and 3) Support personnel as anti-doping educators.

Importance of trained and supportive doping control staff. The negative emotional experiences athletes had with doping control were eased with empathy and support from staff who were aware of their needs and impairment. After participants explained their initial reactions to being selected for doping control, many reflected that the staff ensured that the process was made easier with the supportive and empathic approach they showed. After the test, athletes mentioned that they felt '*safe*' with the doping control officer and support personnel commented that they had '*total trust*' in them. While Stefanie (athlete) mentioned she found doping control '*shocking*' and her father, Chris,

stating that it was '*traumatic'*, this was overcome by the way in which it was conducted by the staff, who were described as '*really nice people*' and '*very friendly*'. Here, Chris explains that the doping control officers were well aware of the needs of his athlete and that they treated Stefanie with empathy and care to ease the distress that she experienced when being asked to report to doping control:

> *Chris*: They're extremely good, extremely competent. They obviously must follow the schedule exactly to the letter, which they do. But to do that in a friendly, supportive sort of, slightly relaxed in one sense of the word, was quite impressive.

Thus, while the process of taking part in doping control can increase anxiety for athletes, the doping control staff were integral for ensuring that they felt safe and eased any distress by being friendly, caring and empathetic.

Creating accessible anti-doping education for those with intellectual impairments. With the anti-doping rules and regulations being difficult to comprehend during education sessions, participants identified several ways to better support their understanding and engagement and make it more accessible to help them better recognise their rights and responsibilities. First, athletes identified that learning from other athletes, rather than it being from an anti-doping educator, helped them '*focus*' on the content as it '*made it more real*'. Support personnel discussed that learning about how other athletes' '*story*' their own experiences can help their athletes better grasp key learning outcomes than when anti-doping information is presented prescriptively from someone who they cannot relate to. Second, education that was experiential, which included '*role playing*', and '*materials that the athletes could hold*' were identified as important to help them better understand the content. Athletes better remembered and readily recalled their experiences of anti-doping when they had been actively involved in it. Third, short sessions (<20 minutes) that are tailored for athletes with intellectual impairments and delivered in small groups were identified as ways in which to better help them. Here, Sophie (coach) explains that separate, smaller group sessions for athletes with intellectual

impairments could increase engagement with the content by making them feel more at ease and allow opportunities to express their true self:

> *Sophie*: I would say it's important to have them in a separate session because that way they don't feel exposed or vulnerable by the people who do understand and are sitting there fidgeting as they're bored, you know. I think it's important to let them have a session where they're going to be able to come out and say 'I understood all of that. That all made sense. And now I know what I'm going to do'.

Support personnel as anti-doping educators. As a result of the lack of information athletes retained during anti-doping education, many support personnel reported that the sessions received by the athletes were ineffective so took personal responsibility to help their athletes better understand the anti-doping rules. All support personnel attended the education their athletes received, and many took it upon themselves to further inform their athletes about specific anti-doping issues throughout the season, whether that be at training, in the car to a competition, or at home. Hazel (parent) talked with Damian (athlete) about why he needs to use the informed sport website for checking a dietary supplement at the dinner table, and Michael (coach) informed Milo (athlete) that he would need to go with the doping control officer if he was selected at a competition.

Further, it was recognised that support personnel can work together to collectively help their athlete better recognise and understand their anti-doping rights and responsibilities. As athlete support personnel can include, for example, parents, nutritionists and physiotherapists, they would often lean on one another to educate their athlete about particular topics (e.g., nutritionist mentioning to only use dietary supplements that are batch tested, coaches mentioning what happens at doping control, parents showing how to check medications) and further reinforce the anti-doping education learning outcomes throughout the season. Here, William (coach) discusses the value of having a team around the athlete who are anti-doping educated and can support them at different times throughout the day:

William: It has to be a collaboration with the coach and the parents. And if you've got a strong enough support team around that athlete and the support team are educated well enough, they can get it through to the athlete or get it across to the athlete. What they can do, what they can't do, what they should do and what they shouldn't do.

Study 2 – Anti-doping stakeholders experience of supporting athletes with intellectual impairments

Eight participants (88% female, 42.6 ± 8.8 years old) from United Kingdom (n = 3), Belgium (n = 1), Brazil (n = 1), Japan (n = 1), New Zealand (n = 1) and Slovenia (n = 1) volunteered for the study. All were currently working in an anti-doping role for an international (n = 2) and national (n = 5) anti-doping organisation, or a national sport organisation (n = 1). Years of experience working within an anti-doping role ranged from 3 to 24 years (10.9 ± 8.76). Following interviews and analysis, we grouped data into three higher-order themes, each with lower-order themes.

Top-down governance of anti-doping education

In this higher-order theme we discuss the top-down governance of anti-doping. That is, with WADA providing anti-doping policy through the WADC and international standards (e.g., testing and education), this is filtered down to both international and national anti-doping organisations who would then implement this onto respected national sport organisations. Two lower order themes are presented: 1) incongruence between policy and practice, and 2) lack of expertise and little support available.

Incongruence between policy and practice: To be compliant with WADA and the International Standards for Education [ISE], participants discussed the policy that they are required to implement. However, in practice, national organisations found this very difficult to mandate for athletes with intellectual impairments who could not understand several fundamental components, such as strict liability, therapeutic use exemptions and anti-doping rule violations. The top-down governance of how anti-doping policy is structured appeared to cause incongruence between what national anti-doping organisations instruct sport organisations to implement and the practicality in achieving it. In the

following example, Veronica, who works for a national anti-doping organisation, explains the mandate of anti-doping education for all athletes prior to a competition, and the difficulty for Rianna, who works for a national sport organisation, to implement:

> *Veronica: The [anti-doping] policy is very strict in the sense that you have to have this education before you go to a [competition]. We've developed it so that the education is a particular process… that's based on the ISE recommended modules, so as long as those modules are in that education, we're fulfilling the needs of the ISE, we're kind of doing what's mandated from us.*
>
> *Rianna: Athletes who had intellectual impairments and just we had a pretty open and frank conversation that it [anti-doping education] just wasn't the right way for them to be educated, it was too much, it's too much information, um, and actually it's, it's not particularly the most empowering, err, education when they may have to have quite a lot of help to go through it. So, for those athletes we don't know what to do because from a compliance perspective, this does not work.*

When probed about the mandatory nature of anti-doping education for national sport organisations, participants from both international and national anti-doping organisations explained that while the education is mandatory, there is flexibility in how it is delivered. Here, Sara (international anti-doping organisation) discusses that in practice covering all the topics in the ISE is both unlikely to be achieved and difficult to understand for athletes, so the methods in which an organisation provide the education should change:

> *Sara: Um, like of course, you know, there are whatever, how many mandatory topics there are in the, in the Code that we're supposed to educate on, um, and of course it says that, but then, you know, to me, like, what does that mean in reality? What does that mean in the real world? What does that mean in the everyday life of an athlete? … I think, um, we need to, of course*

we need to respect what's in the rules and what is there about compliance, um, but then we need to be flexible in how we deliver it maybe.

To improve the implementation of anti-doping policy, participants suggested better communication between organisations. Participants from anti-doping organisations mandating education to national sport organisations mentioned that clearer communication about how and what can be delivered could be improved:

Nathalia (anti-doping organisation): We'll go out with a, you know, mass, mass kind of communication to say, 'This is the e-learning we want athletes to go through.' But we do say that it can be changed to be made more accessible for some athletes. But somehow along the line the message gets lost, and people will be hitting their head against a brick wall trying to get through it because they've understood that we've said, 'E-learning is mandatory,' because for the vast majority it is. So where, and understandably they get quite kind of, err, set on, err, 'Okay, it's, they have to do this, they have to do this,' is because we say it's mandatory education.

The combination of miscommunication and mandatory nature of policy resulted in anti-doping becoming a nuisance to deliver to athletes with intellectual impairments. Instead of focusing on helping them understand their rights and responsibilities, participants reported that they needed to show they were compliant and wanted athletes to "get through it" rather than ensuring they understood the content of the session. Thus, the aim was not about ensuring effective anti-doping education, but about ensuring the organisation were compliant with the ISE.

Nathalia (national anti-doping organisation): You know, they [anti-doping educators] don't appreciate the importance of it and will just say, 'Okay, we just need to do this session, as long as it's done it's a tick.' They don't appreciate the importance of, 'Okay, we want to make sure everyone who's come out has had a really, you know, positive engagement at that session, has

come out and has learnt something and it's not just a, "Okay, they were there, they sat there, so they're done, they're tick."'

Lack of expertise and little support available: While participants had experience of educating athletes without intellectual impairments, and in some cases, decades of experience, all reported that they were not qualified to educate those with an intellectual impairment.

Sara (International anti-doping organisation): Nobody can do it, so I, I went to all the national and international federations and, err, told them, err, like that, and nobody said they could do it

Keeley (national anti-doping organisation): I have to be honest, I have no idea what kind of education we could actually provide for the athletes, like, have no idea, like how to do educate for them, 'cause I guess they are, you know, different, err they have different issues

Nathalia (national anti-doping organisation): We can do our very best, and we try and work… I think we had an athlete, and it was, um, yeah, it was around strict liability, she said, 'She just won't, she doesn't understand, doesn't understand that.' And I thought, 'I, I don't know, I don't know the answer to that one.'

While participants from national sport organisations sought support from their respected anti-doping organisation, and national anti-doping organisations from their international anti-doping organisation, both received either no response, or were informed that no support is available. Participants were therefore left feeling lost in how to better support athletes with intellectual impairments and ensure that they are meeting their anti-doping objectives for being compliant with the WADC. Here, Rianna (national sport organisation) explains how the national anti-doping organisation could not help support her educate athletes with intellectual impairments, which had further issues with meeting their aims of helping them understand their anti-doping rights and responsibilities:

Rianna: I have, like I did ask [national anti-doping organisation], I was like, 'Do you have anybody in [the] team that has this particular area?' That was a no…. I feel like we're always

just waiting to be invited to things, like we don't seem to be a… It's taken me a lot of hard work for them to factor us in, it was always me being like, 'Hi, can we come and deliver some anti-doping education? And not just because I've got nothing to do, because as a business we need to be compliant and the athletes need to be protected".

With the lack or no support participants received, many took it upon themselves to learn how to best adapt educational material so that it was accessible and inclusive. Many used websites and forums for guidance, with others having background in education and sought support from colleagues. One participant had access to a qualified expert with special educational needs (SEN) who could evaluate the anti-doping material and offer guidance on how appropriate it was for athletes with intellectual impairments:

Rianna (national sport organisation): Luckily we have, um, a lady that works with our Paralympic team, she is a teacher by trade, um, an SEN teacher, she is a specialist in autism, in intellectual impairment, so she has been a great support, um, to sort of check in with her and just get her advice… I think that's just down to my natural curiosity again, that it bothered me that it was one-size-fits-all, so I started to ask some questions about stuff, um, I had kind of linked me up with [name removed], um, about when we were sort of pulling sessions together how that might look different for that group of athletes, just to make sure they were getting the same learning and experience.

The crucial role of athlete support personnel

This higher order theme relates to the role athlete support personnel had in helping athletes understand and manage their anti-doping rights and responsibilities. Two sub-themes were generated including: 1) importance for including ASP in education sessions, and 2) Additional needs of athletes with intellectual impairments.

Importance for including ASP in education sessions: All participants recognised that to effectively educate athletes, support personnel needed to be involved in the athletes' anti-doping

education. As anti-doping practitioners believed that they were ill-equipped in communicating key anti-doping messages to those with intellectual impairments, participants felt that support personnel could help bridge this gap to help athletes understand it. In fact, the role of parents, guardians and coaches were seen as vital in communicating information to athletes in a manner that was suited to them:

> *Sara (international anti-doping organisation): I guess the messages maybe better coming from the people that know them best because they're just better equipped to deal or to deliver those messages because that's what they do, they, like they know their athlete the best and they know kind of how to communicate with them… it's kind of even speaking to them beforehand, um, just to say, 'Can I look to you, um, during the session, you know, if there's an important point, like and if maybe your athlete hasn't understand it, I will pause and maybe give you opportunity to communicate that message to your athlete.'*

Similarly, participants believed that by having their support personnel present, it facilitated conversations away from formal education. As anti-doping education would often be scheduled once a year during a 60-minute session, the importance of educating support personnel was seen as key to ensure that clean sport behaviours are reinforced throughout the season, such as training, in the car, and a competition:

> *Fiona (national anti-doping organisation): It's my personal feeling but it's important for the coaches and, err, supporting staffs can understand the correct anti-doping rules and tell the athlete in the daily life, in the daily training, because they are most influential people to the athlete.*

Additional needs of athletes with intellectual impairments: A reason why many participants felt it was difficult to effectively educate athletes with intellectual impairments was related to their additional needs. That is, intellectual impairments often co-occur with other neurodevelopmental traits, such as autism, dyslexia and attention-deficit-hyperactivity (ADHD), which can be challenging for

athletes when confined to anti-doping practices such as a classroom with many people or a confined space, such as doping control:

> *Luana (International sports organisation): But the athlete that, he is intellectually impaired, but also with autism, and this mix, it's not good. Why? Autism, it's not a, err, intellectual disability, as you know, but to put someone in a very narrow room with too much people, someone locked inside the washroom with you, this can be an issue.*

As a result of the variation of intellectual impairment, participants discussed that having their support personnel present was "crucial" in order to ensure that they comply with doping control and can best understand the anti-doping education. Without, for example, a coach or parent present, participants did not believe that they could offer the best education for their athletes. In fact, to help anti-doping stakeholders better prepare for education sessions, many mentioned that they would not know who they were educating until immediately prior to the session. This prevented them from adapting content or putting in place other activities to help athletes understand the aims of the session. While some had received information about classifications, (e.g., S14, TT11, T20,) this did not provide enough detail to adapt the session when other traits co-occur alongside the impairment:

> *Rianna (national sport organisation): We just get a list of athletes, so I have to go back and say, 'Can I have their classification?' and then they just give me numbers [classifications], and I'm like, 'Can I have more detail?' [Laughs] Like it's hard, the classification system is so tricky and so changeable, and like I said, that detail of, because you'll have like a T20 but then you'll go down the line and someone'll say, 'Oh yeah, but they've also got this as well,' and you're, you know, they might be dyslexic or autistic, as well or, or, or… You know?*

Good anti-doping practice

In this final theme, we summarised data relating to what was regarded as good anti-doping practice for athletes with intellectual impairments. Three lower-order themes were grouped into: 1)

empathetic doping control officers, 2) anti-doping athlete ambassadors, and 3) simplified, short, focused education

Empathetic doping control officers: The process of doping control can be clinical in nature (e.g., authoritative, formal, regimented), whereby doping control officers can be abrupt, introduce themselves during occasions that are unexpected, and expect athletes to act upon and understand their rights and responsibilities. Many participants therefore explained the challenges with doping control for athletes with intellectual impairments and expressed how the procedure can heighten athlete emotions, such as anxiety, fear and stress:

> *Miles (national anti-doping organisation): I could imagine that they have more questions, 'Well, what is going on? Well, why, why is this going on? Why, why me? Why, why… The, the procedure is very strict, why, why is this? What is the necessity of a strict procedure? Why can't I drink this or, or go out and, and why…?' The the concept of a, a strict procedure that is accountable is going to be err, very stressful and frightening for an athlete*

To overcome this, participants stressed the need for doping control officers to be empathetic, patient and build a rapport with athletes during notification. Strategies included asking the athlete about their competition or sport, talking them through the process step by step, ensuring that they have their athlete support personnel with them, talking clearly and slowly, explaining what is happening and why, and checking their understanding. Here, Luana (international sport organisation) and Nina (national anti-doping organisation) explain how they notify athletes for doping control:

> *Luana: Talk slowly with the right words, don't put too much complicated or too much complexity words, they don't need to, to be like this. Their life is, is complicated enough, so be easy. So like I, I talk with the, the athlete, like, 'Oh, Congratulations, I saw that you won,' blah blah blah blah, blah blah blah blah.' That's five minutes talking about the good stuffs, always with someone together like the coach or a physio, whatever, and after I explain step by step,*

very generic way, what's going to happen….so, it's nice to double check if they, they know what they are doing...

Nina: I always try to say to DCOs [Doping Control Officers], you know, 'Be nice to the athletes.' You know? 'If, you know, you have to test someone, err, who got a medal, congratulate to him, talk a little bit about the race before you say, 'Oh, you are selected for doping control, let's go, you are not supposed to do this, this, this and this,' So, like, you know, to have a positive relationship, just approach the athlete, try to start that notification process with congratulating him, asking how it was. Because like two sentences could make a huge difference

Building a rapport with the athlete was as viewed as important to help them feel safe for what they are being asked to do; it helped develop trust so that the athlete was more comfortable being with the doping control officer and going to doping control. As athletes can feel like they have done something wrong by being selected for doping control, participants mentioned that to help mitigate negative emotions associated with it, doping control officers should reframe the process to something positive and explain why they have been selected. Participants mentioned that athletes should be informed that doping control "is there to protect clean sport for all the athletes" and that because they are tested it is a sign they are doing "really well":

Luana (international sport organisation): First of all, say to them "you are selecting because you, you are good athletes", never say that it's a bad athlete, because everyone thinks that it is about cheating and they go to doping control because they're cheating and that they are a bad guy. It's not because of this. So, say to them 'You are coming because you are a good athlete, so your position was so great that you are invited to go to the doping control.'

Anti-doping athlete ambassadors: A consensus amongst participants was the importance of having athletes, whether active or retired, as anti-doping ambassadors. Athletes with intellectual impairments enjoyed having other athletes explain the process of their own experiences of anti-

doping (e.g., doping control, TUEs, checking medication), which was perceived to increase engagement and attention during anti-doping education. Participants suggested that by having athlete ambassadors deliver anti-doping education would help increase the importance and effectiveness of it for those with intellectual impairments:

> *Veronica (national anti-doping organisation): I completely agree, an athlete who's done it, who knows what to do, who knows that it's like slightly stressful but it's beneficial, they're going to deliver the message in a much better way that will make them understand it more*

There was an agreement that ambassadors can work alongside educators to help anti-doping policy and practice be more relevant and understandable. That is, participants explained that they would not expect ambassadors to have all the knowledge and understanding of the WADC, for example, but would offer their own insights and experiences of what happens that they had no experience with (e.g., providing a sample in doping control). Importantly, it was stressed that having people who are relatable, in terms of age, appearance and ability, are likely to augment the engagement of education, and in turn, their understanding of it:

> *Keeley (National anti-doping organisation) So, I was always joking because my boss has grey hair, so I was like, you know, having a young athlete doing the session in comparison to a grey old man doing the session, it's a huge difference in appearance, and also in the way they talk and, you know, they explain things and, um… So yeah, it's always nice when you can have athletes delivering the sessions, 'cause you know, they know the best, what's important, which information is important to them. So, I guess it's the way they… It's different, it's better if athletes do it*

In short, the lived experiences of athletes who have been through many anti-doping practices, such as doping control, applying for a TUE or whereabouts, helped foster engagement with the key educational messages and bridge the gap between theory and application.

S*implified, short, focused education:* All participants agreed that the current structure and format of anti-doping education for athletes with intellectual impairments "was not ideal", "wasn't right for them" and that learning outcomes were "completely lost on them". A number of variations and changes were suggested to help improve how the content is delivered, including making sessions simplified that removes technical jargon (e.g., strict liability, anti-doping rule violations, inadvertent doping), short (<15-minutes) whereby athletes' attention can remain throughout, and focused on one topic at a time, which can make it easier for athletes to remember. Participants discussed how separate education sessions specific to athletes with intellectual impairments would also be advantageous, given that educators can adapt content, change the pace of the session and provide specific examples to those who have an intellectual impairment:

> *Keeley (National anti-doping organisation): For sure, a separate session that would really be adapted to their needs, would be more beneficial for them, um, 'cause I don't see that they could follow a normal session, 'cause I know that athletes many times even if they don't have any impairments they, there is a lot, if you want to talk about anti-doping content, it's a lot, it's complicated, especially if they are hearing it for the first time, um, so I'm 100% sure that they wouldn't be able to follow and that it would be more or less useless for them… I would change the content on the slides, from the way, err, you know, I would speak to them, to the, how in-depth with an information I would go, stuff like that.*

Alongside having a separate session, Sara (international anti-doping organisation) highlighted that during the separate sessions, the educator can focus on what the athletes need to know rather than overload them with other topics that are not necessarily relevant (e.g., history of anti-doping, specific gravity of a urine sample). So instead of aiming to educate athletes of all topics listed in the ISE, Sara mentioned that it is better to focus on what is relevant for the athlete at the time:

> *I am trying more to focus like on really important things, that they understand. You know, it's a good thing that they know that that WADA exists, but they don't need to know when it was*

established, how it's organised, what they are doing. … You know, it's not important if the athlete knows what WADA is, it's important that he knows that he needs to be careful what kind of medication he takes, that he needs to be careful with supplements, stuff like that. So, I try to keep my focus like on the really important things, err, but, you know, sometimes we get carried away, and we are just putting stuff in there

Discussion of Findings

Across two studies, our data show that the needs of athletes with intellectual impairments are rarely considered in relation to anti-doping policy and practice. While athletes are expected to understand and in turn comply with anti-doping policy (WADC, 2021), anti-doping practice is often inaccessible, with all athletes reporting a superficial understanding of their rights and responsibilities. Anti-doping stakeholders find it difficult to implement effective anti-doping practice to meet the needs of athletes with intellectual impairments and are unsure of how to best address their needs while simultaneously remaining compliant with anti-doping policy. A need therefore exists in ensuring that anti-doping practice for athletes with intellectual impairments is made more inclusive and accessible so that they can better understand their rights and responsibilities.

Our data highlight a significant disconnect between the intended universality of anti-doping policy and practice and its actual accessibility of athletes with intellectual impairments. Athletes reported that they are aware they should not take a prohibited substance, which can result in an anti-doping rule violation following doping control (e.g., urine test), but did not fully comprehend more complex aspects of anti-doping, whereby they can commit an anti-doping rule violation through other means (e.g., refusing a drug test, taking a prohibited medication). These findings adhere to the theoretical distinction made by Martinelli et al. (2023) between 1) accepting the legitimacy of anti-doping policy, leading to voluntary cooperation, and 2) the behavioural component of compliance underpinned by understanding of anti-doping practices. In short, athletes accepted anti-doping, but did not necessarily understand why.

With a lack of understanding, athletes reported experiencing negative responses during doping control, such as, anxiety, confusion and fear. Reasons for such negative responses were related to, for example, the perception of being classed as a 'cheat', the unexpected nature of the test, change of routine and contravention of social norms (e.g., urinating under observation). Such experiences were likely to have created cognitive dissonance (Etherton et al., 2020; Harmon-Jones & Mills, 2019) between what athletes were told not to do (e.g., 'do not open the door to someone you don't know) and what they were expected to do (e.g., 'answer the door to an unknown doping control officer). Resolving dissonance can require mental flexibility, social skills and creative thinking, such as adapting thoughts, positive self-talk or seeking justifications (McGrath, 2017), which can be hard for those with intellectual impairments (de Vries & McGlinchey, 2023). To help with this, both athlete support personnel and anti-doping stakeholders highlighted the important role doping control staff had in helping them manage their discomfort by recognising it, showing empathy, explaining why it is happening and allowing flexibility, such as allowing them to finish training, warming down, and eating dinner. This data further underscores the requirement of training anti-doping control staff in understanding how to appropriately support athletes with intellectual impairments.

While anti-doping education is implemented to help athletes better understand their rights and responsibilities during anti-doping practice (Woolf, 2020), data from participants in Study 1 revealed that they had poor experiences of it, with many reporting that it was too long, complicated and '*text heavy'.* Little adaptation was made to the traditional classroom-based model, and such practices are suggestive of ableism, which refers to the prejudice in favour of non-impaired people and the discrimination against those with impairments through culturally situated norms for certain abilities (Campbell, 2008). This was further supported by data in Study 2, where anti-doping stakeholders discussed their lack of understanding of how-to best support athletes with an intellectual impairment, and while they sought support from elsewhere (e.g., international and national anti-doping organisation), were often left on their own to work it out. This in turn, developed a frustration with anti-doping stakeholders who were unable to achieve effective anti-doping education to this

cohort, and in turn, developed a disengagement in their delivery. The education athletes received is therefore favoured towards those who can understand, interpret and act upon it and underpinned by an ideal that athletes should aspire to in order to participate in sport (e.g., understanding strict liability, being able to check medications and knowing how to apply for a TUE). This unintended consequence of current anti-doping approaches, is likely to have 1) excluded, stigmatised and alienated those who could not grasp the information being presented, and 2) generated a superficial approach provided in anti-doping practice that prioritises completing requirements of anti-doping policy over and above meaningful engagement.

Previous research into educational settings for people with intellectual impairment has demonstrated how the typical cognitive limitations reduce the efficacy of this type of educational model (Owens et al, 2020). Cognitive skills such as attention, memory, speed of processing are linked to learning efficacy and as such, for anti-doping education, a need exists for this to be adapted so that it is effective for athletes with intellectual impairments. Inclusive adaptations are needed and as suggested by participants across both our studies and elsewhere (Jimoh et al., 2024; Khan, 2024; Knight et al., 2019) include, shorter single-topic, sessions (<20 minutes) delivered at a slower pace in small groups, with accessible language, which repeats messages and focuses on interpersonal skills via multiple delivery modes (e.g., experiential exercises, role models from those who have intellectual impairments). As there are several 'invisible' anti-doping expectations placed on athletes (e.g., valuing fair play and honesty, understanding anti-doping rule violations, knowledge of anti-doping rights; Martinelli et al., 2023), athletes with intellectual impairments can be more reliant on learning from observed behaviour, which is incredibly difficult when much of the required behaviour in anti-doping is unobservable. This places further emphasis on accessible educational materials that can help educate athletes about the underpinning reasons for anti-doping, and importantly, why these are in place.

Although our suggestions above are ideal, we recognise that in practice this is likely to be very difficult for a national anti-doping organisation to implement (Backhouse, 2015; Woolf, 2020). To help

athletes understand their anti-doping rights and responsibilities, support personnel were identified as integral to the process. Support personnel are central to athletes with and without impairments (Mazanov et al., 2015; Patterson et al., 2016; Patterson et al., 2023), who can help reinforce messages and guide decision making to their athlete (Barnes et al., 2020). Our data highlighted that support personnel work collaboratively to reinforce key messages to their athletes throughout the year (e.g., in the car, during dinner, at a competition) and take a collective responsibility for their athlete's decisions. Support personnel acting as intermediaries for people with intellectual impairments is common practice within settings such as health care (Chinn, 2022; O'Brien & Randjelovic, 2024) and provide an experienced resource. As such, we highlight the need for athlete support personnel to be included in the education that their athletes receive so that anti-doping education can be reinforced throughout the year.

There are a number of reflections from this study we would like the reader to consider. First, while some interviews were short (the minimum being 22 minutes), this is not unusual for those with intellectual impairments (Hollomotz, 2018). Many people with intellectual impairments find it difficult to articulate and recall complex experiences and will answer directly and succinctly, without adding additional supplementary information (Corby et al., 2015). Although this may have decreased the amount of data obtained, participants articulated specific and strong views about their experiences, which were further supported and elaborated on by their support personnel. As such, the voice of the athlete was central in the interpretation, representation and recommendations presented in the paper. Second, we offered a financial incentive to participants completing the study. While researchers may not be able to replicate this in future studies, we found that this unlikely affected who and how many participants came forward. Some participants declined payment initially, with others mentioning that they would have completed the study without it. This was reflected in their value of the study's aims, where they stated how important the research was for them and the community of athletes with intellectual impairments. In short, our participants valued the opportunity to have a platform in

which to express their thoughts and experiences, and how anti-doping policy and practice can be improved.

Finally, our data and the recommendations that follow, are not limited to those with intellectual impairments and may be transferable to other athletes (c.f. Smith, 2018), who are likely to have similar experiences, such as distress during the doping control procedure, confusion with why they are being selected, and encountering education to be difficult to engage with. Such experiences also relate to notions of naturalistic generalisability (Smith, 2018), which resonate with the lead author's experience of delivering anti-doping practice (e.g., doping control and education) where many athletes have discussed the anxiety of doping control and the confusion of strict liability. As such, while we have focused here on helping to improve anti-doping policy and practice for those with an intellectual impairment, our data can be generalisable to other athletes without impairments and highlight potential best practices that can be implemented (e.g., shorter education sessions, empathetic doping control staff).

Conclusion

In conclusion, in our project, we have shown that there is a clear and pressing need to ensure anti-doping policy and practice is inclusive and accessible for athletes with intellectual impairments. Across two studies, sampling athletes with intellectual impairments, their support personnel and anti-doping stakeholders, we found that while athletes are expected to comply with anti-doping policy and practice, this often overlooks the cognitive, social, and emotional challenges athletes with intellectual impairments experience. As such, there is a disconnect between policy and practice in athletes' understanding and experience of anti-doping, which has in turn, created situations of fear, anxiety and distress for athletes, and a superficial compliance of stakeholders implementing anti-doping practices.

Across both studies, it is evident that existing anti-doping education frequently fail to account for the learning and communication needs of this demographic. Many participants reported a one-size-fits-all approach, that was characterised by lengthy, complex education sessions, that does not meet the needs of athletes with intellectual impairments and, in some cases, actively excludes or alienates them. In turn, this has is suggestive of an ableist system where understanding and compliance are assumed, rather than supported. Our findings therefore call for a more person-centred approach to anti-doping practice, which actively embeds support personnel within the practice, encourages flexibility and empathy in doping control procedures, and provides tailored, accessible education. While it is acknowledged the challenges anti-doping and sport organisations will face implementing such changes, the benefits of such an approach will ensure that athletes with intellectual impairments are aware of their anti-doping rights and responsibilities and, in turn, less likely to commit an anti-doping rule violation. In fact, such an approach may represent best practice more broadly, by reducing distress and improving engagement for all athletes, not just those with intellectual impairments.

Recommendations and Implications for Future Research/Translation of Research into Practices

To ensure that anti-doping policy and practice is both inclusive and accessible for athletes with intellectual impairments, the findings from our project indicate a number of recommendations including upskilling doping control personnel, ensuring accessible anti-doping education, mandating that athlete support personnel are present within anti-doping education and including athletes as ambassadors within anti-doping education

Adapted doping control procedures. Doping control personnel should be trained to adopt approaches that are sensitive to the cognitive and emotional needs of athletes with intellectual impairments. Notification and sample collection should be conducted using clear and accessible language, with an emphasis on empathy and rapport-building. To reduce distress and confusion, a need exists for doping control personnel to allow additional time for testing, provide reassurance throughout the process, and reframe doping control positively (i.e., as recognition of sporting achievement rather than suspicion of doping).

Accessible anti-doping education. Anti-doping education should be redesigned to enhance accessibility for athletes with intellectual impairments. Sessions should be short in duration (≤20 minutes), focus on a single topic at a time, and avoid technical language or jargon (e.g., ADRVS, TUEs, Strict Liability). Delivery should be experiential and interactive, such as role play of checking supplements or participating in doping control, and conducted in small groups of athletes with intellectual impairments. These adaptations will facilitate engagement, comprehension, and retention of key learning outcomes.

Mandatory inclusion of athlete support personnel in education. Given the integral role of athlete support personnel in supporting athletes' decision-making, parents, guardians, and coaches should be required to attend anti-doping education sessions alongside athletes. Athlete support personnel should be educate alongside their athletes to ensure they are equipped to act as intermediaries, reinforcing and repeating key messages throughout the sporting season and at critical

points through the season (e.g., applying for a therapeutic use exemption or reporting to doping control).

Athlete ambassadors and peer-led education. Athlete ambassadors, with and without intellectual impairments, should be incorporated into anti-doping education. Hearing lived experiences directly from peers can make content more relatable and meaningful, improve attention, and foster trust in the legitimacy of anti-doping practice. Ambassadors can complement educators by bridging the gap between technical policy and real-world experience.

Future Research

The results of our project highlight the need for further research into anti-doping and athletes with intellectual impairments. This relates to assessing the effectiveness of adapted educational formats, including short and focused sessions, experiential role play, digital tools, and peer-led delivery, in improving athlete understanding, engagement, and behavioural outcomes. While we are proposing several "best practices" for athletes with intellectual impairments, it is unknown how effective these are in helping athletes understand their anti-doping rights and responsibilities. Co-created research that embed athletes with intellectual impairments within the development, implementation and evaluation of anti-doping education would be fruitful in ensuring that any changes are relevant for this population. Similarly, research is needed that examines the psychological and emotional impact of standard versus adapted doping control practices. Identifying strategies that reduce anxiety, fear, and confusion during testing will provide evidence for the most effective and supportive approaches. Future work should assess whether experiences differ across sports, nations, and types of intellectual impairment and how practical it is to adopt such changes within practice. This is particularly important to address where there are structural inequities

Parternships

VIRTUS (the international sport organisations for intellectual impairments) helped with recruitment of participants as well as dissemination of results.

UK Anti-Doping were presented with the results at the Global Education Conference in Cannes, France and have since used the results of this project to create anti-doping educational materials for athletes with intellectual impairments.

Publications

Hurst, P., Burns, J. and van Biesen, D., 2025. Athletes with intellectual impairments and their support personnel's experience of anti-doping. *Qualitative Research in Sport, Exercise and Health*, pp.1-16.

Seminars

Hurst, P., Burns, J. and Van Biesen, D., 2024, February. The education that the intellectually impaired get is not what they need": Athletes with intellectual impairments and their support personnels' experience of anti-doping. In *Global Education Conference, Location: Cannes, France*.

Further Dissemination

A meeting was held with the Education team at UK Anti-Doping in July 2025 to help inform their practice for athletes with intellectual impairments. As such, a working group has been formed to develop better education materials for athletes with intellectual impairments. A webinar has also been scheduled, where Dr Hurst will present the findings via Zoom to UK Anti-Doping's Educator Delivery Network (EDN) on the 15th October.

A meeting was held with the anti-doping team at VIRTUS about the findings of our project and what can be achieved to help athletes with intellectual impairments better understand their rights ands responsibilities.

Appendices

Study 1: Athlete interview guide

Opening and Introductory Questions

1. Please tell us your name and your sport.
2. Could you tell us about how you first got involved in playing your sport?
3. Could you tell us about your favourite sporting moment

What is anti-doping?

1. Have you heard of the words “anti-doping” or “clean sport”.
   **Note If participants are unsure, then state that anti-doping and clean sport are related to rules about stopping the use of certain drugs in sport, like anabolic steroids*
2. What do you know about anti-doping?
3. What were your first memories of anti-doping?
4. Do you believe that anti-doping is important?

Anti-doping education

**Before questioning, provide a brief overview of anti-doping education if they are unsure about what it is (e.g., often athletes are educated about the anti-doping rules. This can often take place formally, where a person gives you a lesson on anti-doping, it can be information you have read online, or when at a competition and there is a section in the stadium where people talk about clean sport or anti-doping)*

1. Please tell us about the anti-doping education you have received.
   Probes
   a. What can you remember about what you were told or read about anti-doping?
   b. Has anyone given you any information about anti-doping? Can you remember who this was and when? Can you remember what they said?
   c. Have you ever seen anything written about it?
   d. Could you understand the information that was given to you?
   e. How was the information delievered (e.g., pace, location, presentation).
2. What have you enjoyed about anti-doping education?
   Probes
   a. Facilitator, the length and timing of the session, the content provided
3. Was the information you received easy to understand and why?
   Probes
   a. Did you feel confident in asking questions if you did not understand something?
4. If you were to improve anti-doping education, what would you change?
5. What would help you to understand anti-doping education a little more?
   Probes
   a. Facilitator, the length and timing of the session, the content provided
6. Do you have any more comments about anti-doping education that hasn’t been addressed?

Anti-doping drug testing

**Before questioning, check that the athlete knows what drug testing is and if unsure provide a brief overview of it (i.e., Athletes are asked to wee into a bottle to check that the athlete has not been taking banned drugs)*

1. What are your first experiences with drug testing?
   a. What did you think would happen?
   b. What were you feeling?
   c. What were your thoughts?

    d. If you have had more than one drug test, have your thoughts and feelings changed since your first?
2. Do you know what you need to do during a drugs test?
    Probes
    a. Confidence in completing the drug test
    b. Understanding and awareness of rights and responsibilities
    c. When you had that drug test do you think you could have said no?
        i. What would have happened if you had said no?
    d. Did you feel ok about it?
    e. Did you know that you could have another person there with you?
    f. Do you know how the drug test can be modified for you?
    g. Did you feel you could seek support?
3. Is there anything that could have been improved when you have been drug tested?
    Probes
    a. The information you were given about the drug test
    b. Doping control officer behaviour and attitudes
    c. What could have made it a better experience?
4. Do you have any more comments about drug tests that hasn't been addressed?

Study 2: Athlete support personnel interview guide

Opening and Introductory Questions

1. Please tell us your name and the role you play to support your athlete.
2. Could you tell us about how you first got involved in sport

What is anti-doping?

1. Have you heard of the words “anti-doping” or “clean sport”.
   **Note If participants are unsure, then state that anti-doping and clean sport are related to rules about stopping the use of certain drugs in sport, like anabolic steroids*
2. What do you know about anti-doping?
3. What were your first memories of anti-doping?
4. Do you believe that anti-doping is important?

Anti-doping education

**Before questioning, provide a brief overview of anti-doping education if they are unsure about what it is (e.g., often athletes are educated about the anti-doping rules. This can often take place formally, where a person gives you a lesson about anti-doping, it can be information read online, or when at a competition and there is a section in the stadium where people talk about clean sport or anti-doping)*

1. Please tell us about the anti-doping education your athlete has received.
   Probes
   a. Who delievered the session?
   b. What can you remember about what they were told about anti-doping?
   c. How was the information delievered (e.g., pace, location, presentation).
2. What do you believe your athlete enjoyed about anti-doping education?
   Probes
   a. Facilitator, the length and timing of the session, the content provided
3. How easy do you believe the information for your athlete was easy to understand and why?
   Probes
   a. What do you think made it easy/hard to understand?
   b. Did they feel confident in asking questions if they did not understand something?
4. If you were to improve anti-doping education for your athlete, what would you change?
5. What would help your athlete understand anti-doping education a little more?
   Probes
   a. Facilitator, the length and timing of the session, the content provided
6. Do you have any more comments about anti-doping education that hasn’t been addressed?

Anti-doping drug testing

**Before questioning, provide a brief overview of drug testing (i.e., athletes can be asked to provide a urine sample which is tested for drugs. That is, athletes are asked to wee into a bottle to check that the athlete has not been doping)*

1. What are your first experiences for when your athlete was drug tested?
   Probes:
   a. Did you know why it was happening?
   b. What did you think would happen? What were you feeling? What were your thoughts?
   c. What do you believe your athletes were thinking?
   d. What do you think they were feeling?
   e. If your athlete has had more than one drug test, have your thoughts and feelings changed since their first test?
2. Are you aware of the rights and responsibilities you have when your athlete is drug tested?

    a. When your athlete is drug tested, do you think they could have said no?
        i. What would have happened if they had said no?
    b. Did you feel that you had any control about what was happening?
    c. Did you know that you or someone else could be there with your athlete?
    d. Do you know how the drug test can be modified for athletes with an intellectual impairment?
    e. Did you feel you could seek support (e.g., coach, national governing body, anti-doping organisation)
3. Is there anything that could have been improved when your athlete was drug tested?
   Probes:
    a. What could have made it a better experience?
    b. Information about the drug test before and during it, doping control officer behaviour and attitudes
4. Do you have any more comments about drug tests that hasn't been addressed?

Study 3: Anti-Doping Stakeholders

Opening and Introductory Questions

- Please tell us your name and your current role
- Could you tell us about how you first got involved in your current role
- What are your main responsibilities within your role?

General anti-doping

- Please let us know your first experiences with anti-doping?
- What encouraged you to work within anti-doping?
- What anti-doping training or education have you received?
    a. What training did you receive?
    b. What was considered?
    c. Was it effective?

Considerations with II

- Within your role, could you describe the experiences you have had working with athletes with II
- Have there been any specific differences when working with athletes with II?
- Have you received any training on how best to support athletes with II?
    a) What training did you receive?
    b) What was considered?
    c) Was it effective?
    d) Would it be useful?
    e) Do you believe it is necessary?
    f) What do you think would be involved?
- Do you believe more needs to be done to support athletes with II, and why?

Education

- Could you please describe the experiences you have had with education?
    a) What education have you experienced?
    b) Where were you?
    c) Who delivered it?
- What are you views about the anti-doping education that is delivered to all athletes?
    a) Online vs. in person vs. outreach.
    b) Athlete experiences.
    c) Experiential
- How do you think we can best support all athletes during anti-doping education?
- Should education be the same for all athletes or specific to their needs?
    a) What needs need to be considered?
    b) What would need to change?
- Athletes with II found the education they received complicated and difficult to follow. Why do you think this is?
    a) How do you think we could better support athletes with II during anti-doping education?
- Athletes and their ASP mentioned that for in-person sessions, they would prefer them to have a separate session specifically for athletes with II. What are your thoughts about this?

    a) *Practicality?*
    b) *Necessary?*
    c) *Segregation from non-intellectually impaired athletes?*
    d) *Adequate resources*
- What do you believe the best resources are to educate athletes?
    a) *In person*
    b) *Online*
    c) *Booklets*
    d) *videos*

Drug testing

- Could you please describe the experiences you have had with drug testing?
    a) *Where were you?*
- Could you describe the general emotional experience all athletes experience during drug testing?
- What do you think the difference in experiences, if any, are between non-II athletes and athletes with II?
- Some athletes with II experienced emotional distress during the drug testing procedure. Why do you think this happened?
    a) What do you think the best methods are to reduce this emotional distress?
    b) Do you believe they require more time? Assistance? Support?

Final comments

- Is there anything else that hasn't been covered that you would like to share?

Infographic of Study 1