‘Insulin is super dangerous if you don't know what you're doing’: Situating the risks of insulin within the image and performance enhancing drug community

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'Insulin is super dangerous if you don't know what you're doing': Situating the risks of insulin within the image and performance enhancing drug community

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Abstract

Introduction: Insulin is an essential treatment within diabetes management; however, it takes on a role of enhancement within image and performance enhancing drug (IPED) communities due to its anabolic effects. This study sought to provide insight into how IPED users perceive and manage the risks linked to insulin.

Methods: We conducted semi-structured interviews with 10 individuals from Australia and United Kingdom who used insulin as part of their IPED protocols. The analysis followed an iterative categorisation approach and applied the lens of situated rationality theory.

Results: The decision to incorporate insulin was influenced by peers' experiences and preferences. Participants highlighted the risks and responsibilities associated with insulin use, emphasising the need for precise lifestyle habits. They recognised the potential dangers and called for comprehensive harm reduction strategies within IPED communities to respond to such concerns. Some participants expressed reluctance to discuss insulin openly, underlining the importance of education and awareness to mitigate health risks associated with underground and uninformed use.

Discussion and Conclusions: While people who use IPEDs demonstrate awareness of the risks associated with insulin, their practices of routinisation moderate these risks within the context of IPED use. Silence as a risk-reduction strategy highlights vulnerabilities among certain prospective users, while the hierarchical structure of IPED use establishes expertise and status within the community. Reconsidering insulin risks entails reframing harm reduction messages to better match the social dynamics of IPED communities. Closer ties between IPED communities can enhance support accessibility, particularly through peers, who, with their firsthand knowledge, can offer tailored guidance.

KEYWORDS
harm reduction, injecting, insulin, public health, steroids

1 | INTRODUCTION

In the medical field, insulin is predominantly recognised as a fundamental component of treatment for type 1 diabetes mellitus and frequently employed in managing type 2 and gestational diabetes mellitus [1]. Pharmacological insulin is typically delivered via subcutaneous injection, and to enhance insulin replacement for individuals with diabetes, manufacturers have created diverse insulin formulations, such as insulin analogues [2]. This has led to the development of insulin analogues with rapid onset, appearing in the bloodstream within 5–10 min of injection and dissipating within 4–6 h, while longer-acting insulins can persist in the system for over 24 h [2]. Extensive knowledge on the adverse effects of insulin has been accumulated through diabetes treatment, where it serves a clear therapeutic role [1]. While individuals with diabetes may grapple with weight gain [3] notably, however, hypoglycaemia stands out as the most frequently observed side effect [2] and its significance is magnified by the potential progression to a coma and, ultimately, death [4]. Nevertheless, in the context of gyms and the fitness community globally, insulin takes on a distinct reputation that spans the domain of enhancement rather than therapy. We recognise the evolving landscape where medicinal products, including insulin, are increasingly sought after for non-health-related purposes, blurring the lines between lifestyle enhancement and medical treatment. Hall posits that this phenomenon reflects a broader trend in late capitalism's 'economy of the self', where pharmaceutical drugs are utilised to enhance various aspects of life, from performance at work to image in social contexts, thereby raising pertinent public health concerns [5]. For insulin specifically, its' appeal stems from its potential to induce weight gain, owing to its anabolic effects on both muscle and adipose tissue [6], rendering it an enticing choice for those seeking to increase their muscle mass and overall physique [3, 7, 8].

Extant work has identified the use of insulin remains a pervasive issue within the strength training community [3, 6–8], particularly among people who use image and performance enhancing drugs (IPED). Research has demonstrated that bodybuilders are able to readily access their insulin and syringes through local sources such as friends, training partners, gym contacts, over social media [9] or community pharmacies [6, 10], however, literature points to public health issues associated with counterfeit insulin, with deaths occurring due to the use fake insulin [11]. Those who use insulin in this way often administer it without monitoring their blood glucose levels, leading to reported instances of hypoglycaemia [7, 8]. Biologically, administering insulin improperly can lead to hypoglycaemia, where blood sugar levels drop dangerously low, potentially resulting in seizures, loss of consciousness and, in severe cases, death due to lack of glucose reaching vital organs like the brain [2]. Scholars identified some time ago that it is crucial for the medical, research and fitness communities to be informed about these patterns of use and promote educational initiatives among individuals at risk [3, 6]. However, as we contend, this call has been largely unanswered as insulin use has continued to grow beyond the strength sport community and into general IPED-using communities. Among the IPED-using community more broadly, the use of insulin is reflective of a development of social drug use practices which bring alongside them increased dangers and warrant a unified harm reduction approach. Therefore, the current study sought to focus on articulations and understandings of risk in relation to insulin in narratives of IPED use.

1.1 | Theoretical framing

Drug use is commonly depicted as a 'high-risk' activity, with the potential to result in various social, political and individual detriments. The notion that illicit drug use universally leads to problems has sparked strong reactions, particularly among people who use drugs (PWUD) [12]. The belief that drug use inevitably leads to health and social issues underpins drug control policies in many developed nations, despite resistance from PWUDs who often view use differently [13]. In contrast to the prevailing perception of drugs as hazardous, they have the potential to be viewed as facilitating unique forms of social interaction, relationships and sensory enjoyment that defy conventional standards [14]. Therefore, rather than viewing drugs as stable entities with inherent properties leading to predictable effects, we align with critical scholars of drugs who conceptualise drug actions and effects as emerging from their interactions with various other elements, contexts and activities [12, 15]. Our comprehension of how these contextual factors influence the meaning, uptake and perceived effects of insulin within the IPED community is guided by the theory of situated rationality [16, 17]. This theory proposes that individuals' perceptions and decision-making processes are not isolated from the social environments in which they occur. Risk-taking behaviour among PWUD is frequently labelled as irrational [18]. As a result, we sought to consider how participants perceive and handle the risks linked to insulin, as well as the influence of conventional notions about insulin risk on the positioning of people who use IPEDs (PWU-IPED).

In the context of insulin use within the IPED community, we draw parallels with research surrounding

overdose prevention [18] and diversion [19] messaging. Just as the drug-using community is aware of overdose risk factors while engaging in risky practices due to social and economic constraints that they perceive as more threatening [19], those in the IPED-community who use insulin must navigate the delicate balance between risk and benefit. When examined within other illicit drug use contexts, these perceived risks are not solely evaluated in comparison to other potential threats, but rather, for those who use insulin they are part of a repertoire of expertise. Therefore, we suggest that the assessments of risk for PWU-IPEDs are situated, learned and embodied within their knowledge of insulin and its associated risks. This repertoire allows them to compare their own risk calculations with those of others. Importantly, given the meanings and significance of drug consumption are understood to be relational and contextual [15], we draw on multiple lenses to understand how participants perceive and negotiate insulin use within the IPED community. These frameworks will help us explore the problems associated with insulin use and propose alternative harm reduction strategies. The ultimate goal is to mitigate the negative consequences of potentially prohibitive drug policies and enhance the autonomy of those within the IPED community who use insulin. While this evidently goes against standpoints rooted in paternalism, it seeks to support those within communities who favour continued use rather than abstinence.

2 | METHODS

2.1 | Sampling and recruitment

Semi-structured interviews were performed with individuals regarding their use of IPEDs as part of larger research projects. All participants were required to be using IPEDs and the current paper draws on a subset ($N = 10$) of those who were using insulin for non-medical purposes. Ethical approval was granted from the host University's Human Research Ethics Committees (Approval: 2023/243, 2019/021).

The 10 semi-structured interviews were conducted face-to-face or online with participants in Australia ($n = 7$) and United Kingdom ($n = 3$). Participants all competed in strength sports such as bodybuilding and powerlifting, with some competing at a national or international level at the time of the study. Participants were recruited via purposive and later snowball sampling techniques. This drew upon the networks of both researchers who were gym users. Participants were eligible to be included in this study if they had used insulin and were over the age of 18. The 10 insulin-using participants were males ($n = 8$) and females ($n = 2$) between 23 and 45 years of age. While participants may come from different geographical regions, the use of IPEDs for non-medical purposes generally follows similar principles and practices globally.

2.2 | Materials and data collection

The data for this study is related to excerpts from interviews where participants openly discussed their insulin use among other IPEDs. This discussion emerged from participants within the broader discourse of their IPED use. All interviews were conducted by either the first or second author and digitally recorded and transcribed. A semi-structured interview guide was employed for each participant cohort, with some commonalities between the studies. For instance, every semi-structured interview schedule commenced with prompts aimed at gathering basic participant information before delving into their IPED usage, which was generally where individuals mentioned insulin and were prompted further. Specific questions in the guides included: in your experience, what do you think is the most important information for using anabolic-androgenic steroids? Which IPEDs do you use, and which do you perceive to carry the most significant risks? This was then prompted with questions such as, what about other drugs like insulin? Interviews averaged a duration of 44 min and 42 s, were audio-recorded, transcribed and subsequently subjected to analysis using NVivo (QSR).

2.3 | Data analysis

NVivo 12 was used to organise and code the interview transcripts. An iterative categorisation method was employed to analyse the interviews [20]. The lead author conducted a comprehensive review of interview transcripts and interview notes to identify potential themes. The first author acknowledges his own use of insulin in the context of image and performance enhancement. His lens added to the understanding of the practices of people who use IPEDs, and his lived experience constitutes a valuable asset in the research process, facilitating depth of inquiry during interviews and thereafter. As emphasised by Wakeman [21], this type of positionality aims to transcend mere data by offering alternative perspectives on studied phenomena. Thus, emotional and biographic intersections significantly contributed to the development of theoretical understandings and guided the research approach. In the case of the first author, prior experience with insulin, including positive events (e.g., pre-workout

use leading to increased workout 'pumps') as well as negative experiences (e.g., hypoglycaemic events), informed the first author's exploration of the data. This dual-role, rooted in lived experience, proved beneficial in extracting insightful data during the study. These findings were subsequently shared and discussed with the second author, leading to the development of a comprehensive thematic coding framework. This framework incorporated both a priori concepts informed by an understanding of pertinent discussions and prior IPED research, as well as emergent themes like insulin harm reduction and negotiating insulin safety, following established approaches [22].

3 | RESULTS

3.1 | The use of insulin for enhancement

Participants provided insights into the multi-pronged strategies they employed in the pursuit of specific physique and performance goals.

> P1 [Male]: 'At the moment I'm running testosterone and Boldenone I also just started running T3 [triiodothyronine] for weight loss and fat burning, as well as Clenbuterol also for that fact just starting to try and lean up for the comp [competition] now and I also take insulin. Insulin I take 3 times a day um with my breakfast, with my pre workout meal, and with my post workout meal'.

They highlighted the integration of insulin for its potential effects on muscle growth and metabolic control within a competitive context.

The cohort reflected on cycles where they employed a combination of several different substances, of which insulin was one. Within IPED communities this would be referred to as 'stacking' and 'polypharmacy' within medical and scientific communities. While the use of insulin carries its own distinct set of risks, polypharmacy further increases and complicates these concerns [23].

> P2 [Male]: 'During my third cycle I used six different drugs. [...] I used insulin and growth [HGH] because I read online that people had really good results using both together. [...] I used other stuff too. These were all easy to get, I had a website with everything. That website was like a massive online supermarket, it had everything you needed. I got everything for that cycle on that one website'.

Commonplace in the IPED community, the decision to include insulin was influenced by peers with lived and living experience [24], constituting safe spaces to share information. These spaces constitute both on and offline contexts [25], and reports of enhanced results of insulin when used in conjunction with human growth hormone (HGH) drove participants to engage in similar stacking protocols. Due to HGH's unique protein synthesis stimulation mechanism, distinct from anabolic-androgenic steroids (AAS), extant literature reflects that many athletes opt to combine HGH with insulin and AAS, anticipating additive effects [3]. The ease of sourcing insulin online highlights the accessibility of such compounds through online markets, resembling the procurement of other IPEDs in the online-underground market [26]. While ease of access can present its' own challenges, Cheng highlights that online pharmacies have been discovered to sell counterfeit medicines, specifically diabetes treatment, including insulin [11].

In the context of distinct performance and aesthetic motivations for using IPEDs generally, participants identified different patterns and motivations for insulin use [27], participants emphasised distinct patterns related to the use of insulin regarding the choice to employ it.

> P3 [Female]: 'I'm lucky in the strong man and powerlifting side of things most people are pretty good at eating and then from a visual standpoint, no one really cares how they look. So, insulin gets looked over a lot. A lot of people don't really, they're already spending money on test [testosterone] and anabolics, if they can afford it, maybe they start looking at growth hormone or something different. And then insulin would be the last thing. So that you'd have to have a bit of money to sort of throw away. Even though insulin's cheap, it's, I think it couples with growth hormone as well. Yeah, just the fact of like growth hormone affecting like insulin sensitivity. So, it's not until people end up there that that even pops up'.

They highlighted that within strength sport domains like powerlifting, the primary focus is often on performance and strength, and less attention is given to aesthetic considerations, which appears to be a key driver for choice around using insulin. While insulin is recognised as a relatively inexpensive substance, participants note that it is frequently coupled with HGH, amplifying the overall cost of these combined protocols. The stacking of insulin with HGH is explained by participants through its influence on insulin sensitivity [28], reinforcing its preference for

aesthetic purposes. Further, participants suggest a temporal aspect to the adoption of insulin within the broader journey of IPED use. It implies that individuals often progress gradually through different stages of IPED use, prioritising various substances or strategies over time, reflective of their 'chemical capital'. Drawing on Bourdieusian [29] concepts, IPED consumers are known to hold socio-cultural and physical capital, which are moulded through community practices and norms. Through habitus, individuals internalise these norms, shaping their behaviours accordingly, as elucidated by Hall's [5] examination of the way in which social contexts influence individuals' behaviours within them. Hence, habitus offers a framework for understanding how social contexts shape and modify individuals' behaviours within those contexts. This framework illuminates how social contexts influence behaviour, while firsthand insulin use enhances credibility, validates choices and deepens understanding of its effects.

In extending on the pairing of insulin and HGH, there was mention of the strategic use of these substances as part of a 'bridging' approach in the context of IPED cycles.

> P5 [Male]: 'There was talks about me using insulin in February when I was coming off to kind of bridge that gap between when I next get on. Cause the plan was to use insulin and growth [HGH] as a bridge between steroids'.

This practice involves transitioning between cycles of AAS to reduce the systemic stress associated with use and including reducing total androgen 'load' for a period of time [30]. The combination of insulin and HGH serves to mitigate the potential weight gain associated with insulin use when employed independently [31]. The focus on utilisation patterns, including staging, bridging and progressive use, underscores the substantial expertise among participants. Participants were not solely weighing the risk–benefit analysis individually, but also considering the perspectives and experiences of their peers. Consequently, risk management becomes a pivotal aspect of chemical capital serving as a means for individuals to assert their insider status and positioning within the community.

3.2 | Perceptions of the safety and danger

There was a collective awareness of safety issues associated with insulin use:

> P5 [Male]: 'I used to take insulin. And not get on stage, have no desire to but just wanted to get as shredded as humanly possible. But I know that can lead to some danger'.

The cohort spoke of the prominent role of insulin within the hierarchy of drug utilisation in the context IPEDs. This suggests that insulin is typically considered in advanced stages of an individual's chemical capital accumulation.

> P10 [Female]: 'I kinda feel like insulin comes into play pretty high up that drug chain per se, and normally they've [IPED consumers] tapped out long before that point'.

The participant's reference to 'tapping out' before progressing to insulin implies that the decision to use insulin is influenced not only by individual risk assessments but also by social perceptions and experiences within the IPED community. This suggests that insulin use is situated within a broader context of perceived risk profiles and hierarchical structures of IPED regimes, emphasising the social and embodied nature of these decisions.

When participants described discussion of insulin use among their peers, there was a common understanding that its utilisation involves a heightened level of risk and responsibility.

> P7 [Male]: 'Insulin, definitely anyone that's mentioned that to me. I'm like I would get everything else in order and make sure that if you're meant to eat at 9:02 in the morning that you are going to eat at 9:02 in the morning. Like it's not something that I would throw in there'.

In recognition of the increased responsibility, participants detailed daily routines which were meticulously organised, such as having meals at precise scheduled times, reflected a collective awareness that proper dietary and lifestyle habits are essential prerequisites when considering insulin. This speaks to requirements built through requisite chemical capital and which are at play when considering insulin use.

Attitudes regarding the dangers and safety measures associated with insulin use were rooted in the acute physiological effects of insulin. Peers in the community emphasise responsibility and precision with all aspects of their regimen, as they recognise that any lapse in

meticulous care can have severe consequences when working with insulin.

> P9 [Male]: 'Insulin is super dangerous if you don't know what you're doing. Yeah, I've heard random stories of people where they have that and then they're trying to drink like sugarfree coke or not realising it's sugar-free right when they start crashing. Some like bodybuilder that did it. Started getting tired and, like, really crashing out and just wasn't feeling better. And he was drinking something without sugar'.

Mistakenly consuming sugar-free food while experiencing hypoglycaemic symptoms serves as a poignant example of the vigilance required when employing insulin. It reflects a prevailing cautionary stance among the IPED cohort interviewed, emphasising the meticulous and precise nature of insulin use, where any lapse in attention to detail can lead to severe consequences, including the risk of slipping into a hypoglycaemic coma and, ultimately the potential for death. Participants specifically recounted narratives of individuals who came perilously close to experiencing hypoglycaemic comas due to mismanagement of their insulin protocols.

> P3 [Female]: 'So I've had personal experience with someone almost slipping into a hypoglycaemic coma because they mismanaged their insulin protocol and didn't have any sugar in the house. That person very clearly could have died, and I saw that, and for me … you've got people messing with one of the most complex physiological systems … what do you think is going to happen?'

These stories underscore the substantial risks associated with insulin use. Moreover, they highlight the significant gap between the knowledge and the practical implementation of safety measures, as individuals venture into the complexities of manipulating their physiological systems without the necessary expertise or understanding.

3.3 | Awareness of potential risks and precautions when using insulin

Despite the acknowledged dangers associated with insulin use, participants described managing these risks in measured ways.

> P6 [Male]: 'Insulin isn't the evil compound it's been made out to be. It was actually, I think it was only yesterday. I was listening to a podcast they were discussing insulin back in the old days on forums, that people just wouldn't discuss it because they didn't want to be held responsible for, you know, maybe ending someone's life. It's very hard to kill yourself with insulin. Very, very difficult. Not that I've tried. I definitely haven't. But I have definitely pushed up the dose higher than I probably should have, just as an experiment to myself. I wasn't trying to get some big benefit from it. I just wanted to see how dangerous it really was'.

The participant's self-experimentation with higher insulin doses is reflective of the culture of curiosity and experimentation within the community [32]. While IPED influencers discuss the use of such substances on social media [10], their narratives are not free from ambiguities. The limited open discussion and knowledge exchange surrounding insulin within the IPED community may be seen as a risk-reduction strategy employed by some participants, driven by concerns about inadvertently causing harm to others and perpetuating negative perceptions of insulin. Moreover, it highlights the potential dangers of a lack of education and awareness, which could ultimately contribute to adverse health outcomes among IPED users.

Participants recounted personal experiences related to the acute effects of insulin misuse, describing symptoms of sweating, elevated body temperature, increased heart rate and dizziness, which they managed by consuming carbohydrates and resting.

> P4 [Male]: 'I've borderlined [hypoglycemic event]. It's started to come on. I've gone oh okay, I'm sweaty. I'm hot. My pulse is racing. I'm getting a little bit dizzy. Let's drink some orange juice and lay down for 15 minutes. Alright we're good. And I've even managed to do that with long acting. But I think that was just a matter of me putting it straight into the blood stream. Accidental, not intentional at all. Yeah, it's definitely not as dangerous, but you just need to do your research, look at what the therapeutic dose is for insulin. OK, let's start there. Well, maybe not even start there. Let's start a little bit lower, test your response. OK, let's move up a little bit, a little bit further. Week by week or, you know, fortnight by fortnight. Do you

> need to push further than that? Probably not. But that's all comes down to the individuals' desires'.

As participants utilised a range of substances concurrently, however, we cannot pinpoint these harms with precision. Nevertheless, while only one participant directly described a first-hand account of insulin overdose, the narratives collectively convey some awareness of the harms associated with insulin within the IPED community. Participants acknowledged the perceived risks and dangers associated with insulin due to the prevailing silence surrounding its use and its position as the last substance in a hierarchy of substances that PWU-IPEDs progressively come to. Moreover, participants emphasise the importance of conducting thorough research and beginning with a lower insulin dose to test individual responses. Together, this stresses the significance of substance literacy and 'responsible use' among PWU-IPEDs, aiming to mitigate potential risks associated with insulin while allowing individuals to make informed choices regarding their dosage and overall approach to IPED use.

Ultimately, the cohort acknowledged that insulin is inherently risky and that specific harm reduction practices are crucial for safer usage.

> P8 [Male]: 'Especially with the short-acting [insulin], yeah, I mean if you're experimenting for the first time or you know you're still new to it, definitely be aware of the risks, the things that can go wrong. Have those sugars on hand for sure. Absolutely. And I believe, I think the recommendation is 10 grams of carb per one IU. That's not difficult at all. Maybe start at three [IUs], move up to five, see where you go from there. And when you've got insulin syringe, the 100 mark doesn't mean one IU. I've heard many stories about people doing the wrong thing there'.

To mitigate potential hypoglycaemic events, individuals advocate for maintaining readily accessible sources of sugars. They reference the guideline of consuming 10 g of carbohydrates per 1 IU of insulin to help prevent dangerous blood glucose drops. Furthermore, participants advised initiates to start with low insulin doses, typically around 3 IUs, and gradually increase the dosage to avoid acute health complications. They also highlighted the need for precise measurement when administering insulin, as a misunderstanding of insulin measurement units (IU vs. mL) can have severe consequences. These narratives collectively call for specific harm reduction messaging tailored to insulin users within the community, recognising that insulin's narrow margin for error makes informed decision-making and responsible use paramount, ultimately preventing potentially fatal outcomes.

4 | DISCUSSION

Those who use insulin as part of their IPED protocols described multifaceted strategies aimed at achieving specific physique and performance goals. Fitting with the little extant work available, they emphasised the integration of insulin into their drug taking regimens, driven by its potential effects on muscle growth [6] and metabolic control [7] within and outside of competitive contexts. As is commonplace in the IPED community, the decision to include insulin was often influenced by peer experiences [24, 25], something that might occur face-to-face within gyms, online via internet forums or over social media [10]. These experiences resonate with the first author's introduction to insulin, highlighting the significant impact of peer influence on substance use decisions among PWU-IPEDs. Individuals tend to combine insulin with HGH to enhance its effects, mirroring broader literature demonstrating the additive potential of this combination [3]. Speaking to the temporal ordering of insulin, its' introduction into their regimens typically occurred at later stages of IPED use, reflecting a progression through different stages of 'capital' accumulation among this community [33], dependent on individual goals and financial considerations. Individuals who incorporate insulin into their IPED regimens often view it as a means of gaining a distinct advantage, going beyond the 'typical' substances like AAS. They perceive insulin as a tool that provides an extra 'edge' in their pursuit of specific physique and performance goals. In this way, our findings are significant as they demonstrate that participants' attitudes and decisions regarding insulin use are contingent not only on specific circumstances and interpersonal connections [19] but also on the chronological and hierarchical staging of different substances according to their perceived risk profile.

Participants in our study demonstrate a high degree of awareness about the risks associated with insulin use, indicating that they do perceive their actions as potentially hazardous. However, they also describe practices of routinisation that moderate these risks, reflecting the hierarchical and progressive nature of IPED use among this cohort. Therefore, we draw parallels between Bardwell et al.'s broader hierarchy of priorities that encompasses not only risks but also opportunities or advantages [19]. Insulin brings distinct advantages to

PWU-IPEDs regarding anabolic potential in skeletal muscle [34] via insulin sensitivity changes, of which they are aware. These drug capacities [35] are of notable advantage for aesthetic purposes where the IPED-community are known to seek out advantageous conditions which facilitate them being 'jacked' and 'shredded' [36]. In negotiating the 'advantages' of insulin for their physique, PWU-IPEDs negotiated their understanding of risk [37] and responsibility as rational consumers [38]. Specifically, there was common understanding that insulin use involves a heightened level of risk and, therefore, responsibility among this group. As a result, the adoption of insulin goes beyond the realm of IPED capital, or the number of drugs an individual has employed, extending the factors that come into play when considering insulin use. The perceptions of danger and safety measures among participants are shaped by the complex interplay of physiological effects of insulin and broader understandings about IPED risk management. While the potential for death is a significant and real concern, our analysis reveals that risk is contingent and moderated by practices of routinisation, hierarchical ordering, and progressive use of IPEDs within the community.

An individual's relationship with other IPED users and their community significantly shapes their understanding and perception of insulin-related risks. This highlights the need for harm reduction strategies to consider these social dynamics and leverage the forms of capital, like knowledge and experience, within IPED communities to promote safer practices. Considering Wakeman's [39] perspective on understanding the 'self' in research processes, the first author reflects on his own limited concern regarding deterrence strategies in relation to insulin use. However, he acknowledges the significant influence of peers and those with lived experiences in shaping attitudes and behaviours towards insulin. Thus, rethinking insulin risk in novel ways involves reframing how harm reduction messages are communicated and the channels through which they are disseminated, aiming to resonate more effectively with the social dynamics within IPED communities. Peers within the IPED community possess firsthand knowledge and experience, making them well-suited to provide tailored harm reduction resources and guidance. Strengthening integration between PWU-IPEDs and drug user organisations could facilitate this process, fostering collaboration and enhancing the accessibility of support services. However, it is crucial to acknowledge the diverse meanings and motivations for insulin use beyond mainstream bodybuilding circles. This includes recognising contexts where insulin, along with medications like Ozempic (Semaglutide), may be reinterpreted to align with individual or subcultural aesthetic goals, alongside other body modification practices.

This study has a limitation in terms of its relatively small sample size. Nevertheless, it addresses the dearth of literature on insulin among PWU-IPEDs. Future research efforts would be enhanced by employing a larger sample and interrogating insulin practices directly. Notably, insulin use within the IPED community is characterised by perceived risks that shape user behaviour and self-understandings. The risks associated with insulin use permeate the community's collective knowledge base and appear to influence its practices. The phenomenon of silence as a potentially flawed, risk-reduction strategy underscores the vulnerability of certain prospective users, while the hierarchical structure of IPED use elevates the status and capital of others, positioning them as experts within the community. Therefore, within these nuanced perspectives of insulin users and the risks they navigate, we note the need which emerges for comprehensive information sharing, education, and support networks within the IPED community. It is imperative to address the evolving dynamics of substance use among PWU-IPEDs, recognising the unique challenges posed by insulin, to promote informed decisions.

AUTHOR CONTRIBUTIONS

Tim Piatkowski: Conceptualisation, data collection, data analysis, manuscript writing and review. **Luke Thomas Joseph Cox:** Conceptualisation, data collection, data analysis, manuscript writing and review.

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CONFLICT OF INTEREST STATEMENT

None to declare.

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