

# Eat clen? The normalisation of harmful clenbuterol use within digital fitness cultures

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## ARTICLE INFO

### Keywords:

IPEDs  
Harm reduction  
Social media  
Normalisation  
Clenbuterol

## ABSTRACT

Clenbuterol is a  $\beta$ 2-adrenergic agonist that is not approved for human use in the United States but is widely used by bodybuilders and athletes for its fat-reducing effects. Within image- and performance-enhancing drug (IPED) communities, it is commonly referred to as “Clen” and is typically incorporated into a bodybuilder’s drug “cycle” during the “cutting” phase of competition preparation. While well-established within bodybuilding subcultures, clenbuterol use is associated with significant health risks, including tremors, hyperthermia, tachycardia, cardiac palpitations, and, in severe cases, death. Increasingly, concerns have been raised about the diffusion of clenbuterol use into broader fitness communities. This study employs digital ethnography to examine the role of social media in this diffusion process. Drawing on the normalisation perspective (Parker et al., 1998), it highlights how social media platforms shape perceptions and practices related to clenbuterol. Specifically, social media facilitates access and availability, reframes perceptions of risk, enables cultural and social accommodation, and contributes to identity formation among this population. Through the overt promotion, advertising, and discussion of clenbuterol, social media plays a critical role in fostering its acceptability within wider fitness communities. In light of these developments, this paper argues for stronger governmental engagement to mitigate health risks and protect individuals participating in increasingly diverse and evolving IPED communities.

## 1. Introduction

### 1.1. Background

Many image and performance-enhancing drugs (IPEDs) have recognised therapeutic applications, such as oxandrolone in the treatment of muscle-wasting conditions or growth disorders (de Mello Gindri et al., 2025). However, their non-medical (off-label) use is perceived to be increasing, particularly within fitness and bodybuilding subcultures (Christiansen, 2020; Pope et al., 2014b; Sagoe et al., 2014). Exposure to, and accessibility of, IPEDs has been amplified by social media platforms (e.g., YouTube and Instagram), where idealised body images and consumption narratives are continuously circulated and valorised (Cox et al., 2023; Paoli & Cox, 2024). This rise in unregulated use has been linked to a spectrum of physical, psychological, and social harms, yet policy and public health responses remain limited and fragmented (Piatkowski et al., 2025; Piatkowski et al., 2024). The implications of

this sociocultural shift present significant challenges for stakeholders, including public health professionals concerned with harm reduction, as well as law enforcement and anti-doping agencies, particularly given that many of these substances are prohibited or illegal. Among the wide range of IPEDs used off-label, clenbuterol has emerged as a particularly prominent example, especially within online fitness communities. Despite the considerable health risks associated with its use (Daubert et al., 2007; Kumari et al., 2023; Waight & McGuinness, 2016), academic scholarship addressing this trend remains notably limited.

This research focuses specifically on clenbuterol, a substance frequently used for weight and fat loss within bodybuilding and fitness communities (Kumari et al., 2023; Llewellyn, 2011; Spiller et al., 2013). It examines the growing online presence of clenbuterol, for example, in advertisements and video discussions on social media, and considers whether such platforms contribute to the normalisation of this particular IPED. The analysis draws upon the normalisation perspective (Measham et al., 1994; Parker & Measham, 1994; Parker et al., 1999; Parker, 2005)

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<https://doi.org/10.1016/j.peh.2025.100391>

Received 14 June 2025; Received in revised form 28 September 2025; Accepted 28 September 2025

Available online 1 November 2025

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as a conceptual framework to explore shifting perceptions of drug use, specifically how practices once regarded as deviant or socially unacceptable can, over time, become accepted and embedded within mainstream culture.

### 1.2. Image and performance-enhancing drugs

IPEDs encompass a diverse range of substances, including anabolic-androgenic steroids (AAS) such as testosterone and nandrolone, human growth hormone (HGH), clenbuterol (a  $\beta$ 2-agonist used for fat loss), insulin-like growth factor 1 (IGF-1), and selective androgen receptor modulators (SARMs) (McVeigh, 2020). Motivations for IPED use are often associated with bodybuilding, where individuals seek to increase lean muscle mass and accelerate fat loss, as well as with athletic performance, where the emphasis is on enhancing recovery and training capacity (Cohen et al., 2007; Piatkowski et al., 2024). People who use IPEDs frequently report a range of perceived benefits, including improved physique, elevated self-esteem, increased energy, enhanced sexual function, and better athletic performance (Christiansen, 2020; Santos & Coomber, 2017).

Although some IPEDs have legitimate therapeutic applications in controlled clinical contexts, for example, testosterone replacement therapy (TRT) for hypogonadism (Bhasin et al., 2018) or insulin for type 1 diabetes (Piatkowski & Cox, 2024), their non-medical use is associated with substantial health risks (Bond et al., 2022; Horwitz et al., 2019; Pope et al., 2014a). These risks stem partly from wide variation in dosing protocols, cycle durations, levels of knowledge, and drug quality (Piatkowski et al., 2025; Piatkowski et al., 2023). Physiological harms include cardiovascular complications, liver and kidney damage, hormonal imbalances, and infertility (Bond et al., 2022). Psychological harms encompass mood disorders, body image disturbances, and dependency (Ganson et al., 2023; Horwitz et al., 2019; McVeigh, 2020; Kanayama et al., 2009).

Unsafe injecting practices represent an additional and significant concern. Inadequate hygiene, incorrect injection techniques, and the reuse or sharing of equipment can lead to localized harms such as abscesses and scar tissue formation, as well as the transmission of blood-borne infections including hepatitis C and HIV (Hope et al., 2013; McVeigh & Begley, 2017). However, recent research documenting the sharing of injecting equipment is scarce. Nevertheless, these risks highlight the compounded health burden associated with unregulated IPED use, particularly in contexts lacking harm reduction infrastructure.

In response to the public health risks associated with IPED use, a range of interventions has been implemented globally. Broadly, these responses can be categorised into two approaches: (1) harm reduction and (2) prohibition. The latter encompasses criminal legislation and anti-doping initiatives aimed at preventing and deterring IPED use. For instance, research in Switzerland suggests that individuals who use IPEDs are subject to excessive criminalisation, which leaves them vulnerable and with limited access to appropriate healthcare services (Kruijver et al., 2023). Similarly, in Denmark, the expansion of anti-doping policy beyond elite sport led to the targeting of recreational gym users through a strategy known as “muscle profiling,” whereby individuals who appeared unusually muscular or “unnatural” were singled out for drug testing (Mulrooney & van de Ven, 2015). This practice raised significant ethical concerns (Christiansen, 2011; Cox et al., 2022). Such measures should also be understood in the context of the broader stigmatisation of people who use IPEDs (Cox et al., 2024; McVeigh & Bates, 2022) and dominant narratives of harm (Mulrooney et al., 2019), in which risks are arguably overstated in ways that may paradoxically exacerbate the harms experienced by these populations.

In contrast, harm reduction strategies for IPED use continue to evolve but remain fragmented and under-resourced. In the UK, for example, needle and syringe programmes (NSPs) provide sterile injecting equipment to people who use IPEDs (Kimergård & McVeigh, 2014a). However, because these services were originally designed for individuals

using psychoactive substances such as heroin, they often present barriers to uptake among people who use IPEDs, who typically seek to distance themselves from stigmatised identities associated with labels such as “junkies” or “crackheads” (Cox et al., 2024). Moreover, such programmes frequently overlook those who exclusively consume oral IPEDs (Cox et al., 2025a), an important limitation given that clenbuterol is most commonly ingested orally (Kataveni et al., 2025; Kumari et al., 2023). In response to governmental inaction, a “private” harm reduction landscape has emerged (Turnock et al., 2023), including the rise of drug coaches - community members with living-lived experience, who provide advice on use practices (Gibbs et al., 2022; Piatkowski et al., 2024b). While such actors can play an important role in meeting unmet needs, concerns persist regarding their ambiguous legal status and lack of medical qualifications (Paoli & Cox, 2024; Piatkowski et al., 2024c).

### 1.3. Clenbuterol

Weight- and fat-loss drugs constitute a significant subcategory of IPEDs, primarily utilised to modify body composition and attain aesthetic ideals of leanness, muscular definition, and athleticism (Germain et al., 2019; Turnock et al., 2025). While these substances are commonly used within bodybuilding, competitive sport, and other appearance-oriented practices, their use is increasingly observed among the general population, driven by sociocultural pressures and the pervasive influence of social media (Hirst & Turnock, 2024).

One of the most commonly used substances in this category is clenbuterol, a  $\beta$ 2-adrenergic agonist. Compared to other  $\beta$ 2-agonists, clenbuterol demonstrates greater potency, an extended half-life of approximately 25–40 h, and higher gastrointestinal absorption rates (70–80 %) (Spiller et al., 2013). In the United States, its use is restricted to veterinary medicine, where it is prescribed for horses with respiratory conditions, whereas in parts of Europe and Latin America it is also approved as a bronchodilator for human use (Spiller et al., 2013). Beyond these legitimate applications, clenbuterol has become widely used off-label for its thermogenic and lipolytic effects within bodybuilding and fitness subcultures (Kumari et al., 2023; Spiller et al., 2013). In these contexts, it is typically employed to accelerate fat loss, enhance muscle definition, and reduce body weight, often with the goal of attaining a socially idealised physique or meeting the aesthetic and performance standards of competition (Rukstela et al., 2023).

Clenbuterol is available in multiple formulations, including oral tablets, oral syrup, injectable solutions, and inhalation preparations. In clinical contexts, therapeutic dosing for adults with asthma is typically 20  $\mu$ g (one tablet) twice daily (Llewellyn, 2011; Spiller et al., 2013). By contrast, off-label use in bodybuilding commonly involves substantially higher and progressively escalated regimens. Anecdotal and observational reports indicate that some people begin with one 20  $\mu$ g tablet twice daily and increase the dose incrementally (for example by one tablet every three days). Daily intakes of 120–200  $\mu$ g (6–10 tablets) are frequently reported, and in extreme documented cases doses as high as 4500  $\mu$ g per day have been recorded (Spiller et al., 2013; Kumari et al., 2023). Such suprathreshold dosing markedly exceeds clinically recommended levels and substantially increases the risk of adverse cardiovascular, metabolic and neurological effects.

Despite its limited medical use in some countries, clenbuterol is associated with a wide range of health risks. Cardiovascular complications include tachycardia, palpitations, hypertension, arrhythmias, and myocardial hypertrophy (Daubert et al., 2007; Waight & McGuinness, 2016). Neurological effects may manifest as anxiety, insomnia, tremors, and headaches, while metabolic disturbances include hypokalemia and hyperglycemia. Musculoskeletal issues, such as muscle cramps due to electrolyte imbalances, have also been reported (Kumari et al., 2023; Waight & McGuinness, 2016). Furthermore, clenbuterol is often obtained through unregulated markets, exposing the people who use such substances to counterfeit products and inaccurate dosing (Graham et al., 2009; O'Hagan & Garlington, 2018), a risk observed more broadly with

other IPEDs (Coomber et al., 2015; Graham et al., 2009; Antonopoulos & Hall, 2016; Magnolini et al., 2022). Moreover, clenbuterol is frequently used in combination with other IPEDs in a practice known as polypharmacy or “stacking,” which raises additional concerns due to cumulative and often unpredictable interactions between substances (Sagoe et al., 2015; Zahnow et al., 2020). Critically, several studies have documented fatalities resulting from the simultaneous use of multiple IPEDs, including clenbuterol (Dufayet et al., 2020; Favretto et al., 2022; Kintz et al., 2019; Lehmann et al., 2019).

In addition to its health risks, clenbuterol exists within a complex legal and regulatory landscape. In the United States, it is not approved for human use (FDA, 2019), whereas in certain EU countries it may be prescribed for asthma or other respiratory conditions (Al-Majed et al., 2017). In the UK, clenbuterol is classified as a Class C controlled substance under the Misuse of Drugs Act (MDA, 2001), while in Australia it is a prescription-only medication (ODC, 2025). The substance is also banned in sport by the World Anti-Doping Agency (WADA, 2025), listed under “other anabolic agents” and prohibited both in and out of competition. Alarming, clenbuterol has been illicitly used in livestock to promote lean muscle growth, a practice prohibited in many jurisdictions due to concerns over food safety, including residues in meat. Consequently, athletes have been cautioned about inadvertent positive doping tests from contaminated food products (Guddat et al., 2012). It is against this regulatory and health-related backdrop that we examine the proliferation of clenbuterol-related content on social media platforms.

#### 1.4. IPEDs and social media

Social media encompasses a broad array of digital platforms that facilitate the creation and dissemination of user-generated content, enabling interpersonal interaction and community formation across virtual networks (Boyd & Ellison, 2007; Carr & Hayes, 2015). Platforms such as Instagram, Facebook, TikTok, and YouTube provide users with virtual spaces to produce and engage with content, often spanning vast and heterogeneous networks comprising billions of individuals worldwide (Steinfeld et al., 2013). Instagram, for example, which is primarily oriented toward visual communication through images and short videos, reports over 2 billion active monthly users globally (Statista, 2025), highlighting the immense scale and influence of contemporary digital social interaction.

In recent years, social media has emerged as a powerful sociocultural tool for communities of people who use IPEDs and other human enhancement substances, such as nootropics, facilitating the exchange of information and the translation of online knowledge into offline practices (Cox et al., 2023; Cox & Piatkowski, 2024). Of particular concern is the role of platforms such as Instagram, Facebook, TikTok, and YouTube in promoting, marketing, and, in some cases, facilitating the sale of IPEDs (Cox et al., 2023; Gibbs, 2023a; Richardson et al., 2019). Through influencer marketing (e.g., discount codes), user testimonials, transformation imagery (e.g., before-and-after photos), and algorithm-driven content (e.g., prize draws incentivised by likes and shares), these platforms cultivate communities in which IPEDs are normalised and, at times, are even glamorised (Cox & Paoli, 2023; Gibbs, 2023b; Gibbs & Piatkowski, 2023).

These online ecosystems often operate beyond the reach of regulatory oversight, employing coded language or symbolic representations in place of prohibited search terms to facilitate informal advertising and peer-to-peer distribution of IPEDs (Cox et al., 2023; Paoli & Cox, 2024; Cox et al., 2025a). Such prohibited terms typically violate platform policies, as they are associated with content deemed harmful or illegal. Indeed, IPEDs are illegal in most countries, meaning their sale and promotion on social media platforms contravenes both platform regulations and national and international law (Paoli & Cox, 2024). In the UK, hidden advertising by content creators is explicitly illegal (ASA, 2023); however, research on IPED-related content creators remains scarce. Furthermore, these platforms host discussions that blur the

boundaries between health advice, harm reduction, and legality, complicating the digital landscape surrounding IPEDs (Paoli & Cox, 2024). This heightened digital visibility contributes to a broader socio-cultural shift, in which IPED use, once confined to covert discussions in hardcore bodybuilding gyms, is increasingly normalised and mainstreamed, driven by social media influence.

#### 1.5. Approach

The normalisation framework has been used to explain how behaviours once considered deviant or socially unacceptable can, over time, become accepted and integrated into mainstream culture (Measham et al., 1994; Parker & Measham, 1994; Parker et al., 1999; Parker, 2005). In the context of youth drug use in the UK, Parker et al. (1999) emphasised that deviant behaviours are not necessarily marginal or transgressive but can become increasingly common, socially tolerated, and culturally embedded through processes of normalisation. Beyond the use of recreational drugs, Coomber et al. (2016) highlights the normalisation of recreational drug supply via ‘social supply,’ a phenomenon that has been formally recognised and considered in sentencing practices for those involved.

According to Pennay and Measham (2016), the normalisation perspective can be broken into several distinct dimensions. First, *availability and access*, whereby the behaviour or substance becomes more readily obtainable. Second, *prevalence*, reflected in a growing number of individuals engaging in the behaviour. Third, *cultural accommodation*, in which the substance is represented more frequently and positively within media and broader cultural narratives. Fourth, *risk perception*, referring to a decline in the perceived dangers associated with the substance. Fifth, *social accommodation*, where peers, families, and institutions begin to accept or tolerate the behaviour. Finally, sixth, *user identity*, in which individuals engaging in the behaviour are no longer stigmatised but perceived as ordinary or mainstream. This framework provides a valuable lens for analysing clenbuterol use and the role of social media in its continued diffusion into broader sections of society, beyond the confines of hardcore bodybuilding subcultures.

Although initially developed to explain recreational drug use (Parker & Measham, 1994; Measham et al., 1994; Parker, 2005), the concept of normalisation has since been adapted to understand IPED use. Early work by Monaghan, (2002) highlighted how IPEDs were embedded within bodybuilding subcultures and became integral to bodybuilders’ identities. Building on this, Underwood (2017) argued that bodybuilding culture, and its associated IPED use, had migrated into the mainstream, with enhanced physiques increasingly portrayed as the aspirational body ideal. The framework of normalisation has also been applied to multiple dimensions of the IPED landscape. For instance, Brennan et al. (2017) suggested that IPED injecting has become semi-normalised within certain segments of the general population, while Coomber et al. (2015) observed the normalisation of IPED supply within some gym environments. Similarly, Turnock and Gibbs (2023) reported that both IPED use and distribution have become embedded within British gym culture, reinforcing the argument that these substances are now integral to fitness and bodybuilding contexts. Finally, Hirst and Turnock (2024) noted that social media advertising has further contributed to the normalisation of lifestyle drugs, including some associated with weight loss.

Drawing on the normalisation perspective, and building on prior work examining its application within IPED communities, this study explores how social media contributes to the growing normalisation of clenbuterol, one specific, yet potentially lethal, IPED.

#### 1.6. A short note on method

One method frequently employed to examine online IPED communities is passive or ‘non-reactive’ digital ethnography (Janetzko, 2008), situated within the broader and evolving field of digital ethnographic



methodologies (Abidin & de Seta, 2020). This approach involves the systematic collection and interpretive analysis of textual, visual, and audio data available across online platforms, with the aim of deriving meaning from digital cultural practices (Gibbs & Hall, 2021). Building on prior scholarship (Cox & Piatkowski, 2024; Paoli & Cox, 2024; Gibbs & Piatkowski, 2023; Underwood, 2017), the present study employed this online ethnographic method, recognising that IPED-using communities not only communicate but also actively inhabit digital spaces, shaping their own realities and meanings. Focusing specifically on clenbuterol, the study contextualises its diffusion within online bodybuilding and fitness communities, particularly in relation to weight and fat loss, through the lens of the normalisation perspective.

Data collection employed a 'lurking' strategy (Antonopoulos & Hall, 2016), whereby the first author observed and recorded 'unsolicited' textual and visual content (Enghoff & Aldridge, 2019) from publicly accessible social media platforms and accounts. Particular attention was given to Instagram, TikTok, and YouTube over a three-month period. These platforms were selected due to their established significance within IPED research (Cox et al., 2023; Paoli & Cox, 2024; Gibbs & Piatkowski, 2023) and their extensive global user bases. Relevant content was identified using the search term 'clenbuterol,' with reliance on each platform's algorithm to generate similar and related material. Data deemed significant were archived in Microsoft Word files (e.g., captured screenshots), complemented by field notes documenting cultural observations and contextual reflections.

Analysis drew upon screenshots and field notes collected from Instagram, TikTok, and YouTube. A reflexive thematic analysis was conducted (Braun & Clarke, 2021, 2023), with data collection and analysis occurring concurrently. The process adopted a bottom-up approach, in which the researchers manually coded the screenshots and progressively interpreted their meanings as the study advanced. This approach allowed flexibility in categorising data into identified themes, while also being informed by the key dimensions of the normalisation perspective outlined by Pennay and Measham (2016): (1) availability and access; (2) prevalence; (3) cultural accommodation; (4) risk perception; (5) social accommodation; and (6) user identity. Data were extracted from the original Word files and organised into new files corresponding to these thematic categories. Material that did not clearly align with these dimensions was placed into a residual category for further consideration and analysis, with the researchers cross-examining this content to resolve ambiguities and ensure analytical rigour. All ambiguities were resolved between both researchers, with final agreement reached across all material.

Ethical approval was obtained from the University Research Ethics Committee. In line with the British Psychological Society's guidelines for internet-mediated research (Hewson & Buchanan, 2013), ethical considerations included respect for autonomy, privacy, and dignity, alongside the researchers' own commitments to scientific integrity, social responsibility, and harm minimisation. Data were drawn unobtrusively from publicly accessible pages, with no direct interaction between researchers and participants. Although posts sometimes described potentially illicit activities, they were published in open locations where users were aware their content was publicly visible. Therefore, identifiable characteristics were removed to safeguard the privacy of individuals. Prior research (Lamb et al., 2025) highlights that using pre-existing online data reduces participant burden, avoids disrupting community dynamics, and offers a naturalistic account of peer-to-peer exchange.

## 2. Results and discussion

The following section presents the findings, structured around key dimensions of the normalisation perspective as outlined by Pennay and Measham (2016) and situated in relation to existing scholarship. Taken together, the analysis illustrates how social media actively contributes to the normalisation of clenbuterol.

### 2.1. Availability and access

Pennay and Measham (2016) identify increasing availability and access as a central dimension of the normalisation process. Our findings demonstrate how social media intensifies this dynamic, with clenbuterol made particularly accessible to individuals actively seeking it. For instance, on TikTok, a pack containing 100 tablets at a 40 µg dose was openly advertised and offered for sale (Fig. 1).

The video received 806 'likes,' was archived (saved) by 537 users, and shared privately between individuals 175 times. These metrics underscore the immediacy and efficiency of social media communication and highlight its active role in expanding and facilitating access to IPEDs such as clenbuterol. This represents a distinct development from earlier discussions of the normalisation perspective (Pennay & Measham, 2016), as digital platforms accelerate not only visibility but also the mechanisms of distribution.

Various functions supported by social media platforms (e.g., direct messages, shares, likes) provide global connectivity, crossing national and international boundaries and facilitating novel forms of communication that extend clenbuterol beyond traditional, tightly knit networks (e.g., hardcore bodybuilders). This underscores how social media drives this specific dimension of the normalisation process, highlighting its significance in increasing availability and access to these drugs. Through this emerging form of commercialisation, in which IPEDs are marketed and sold online, these dynamics extend and shift existing applications of the normalisation perspective, illustrating the evolving interplay between digital platforms and drug diffusion.

In this context, social media platforms should be understood as engines that accelerate the normalisation of specific substances, a dynamic distinct from earlier discussions of this perspective. Historically, IPEDs

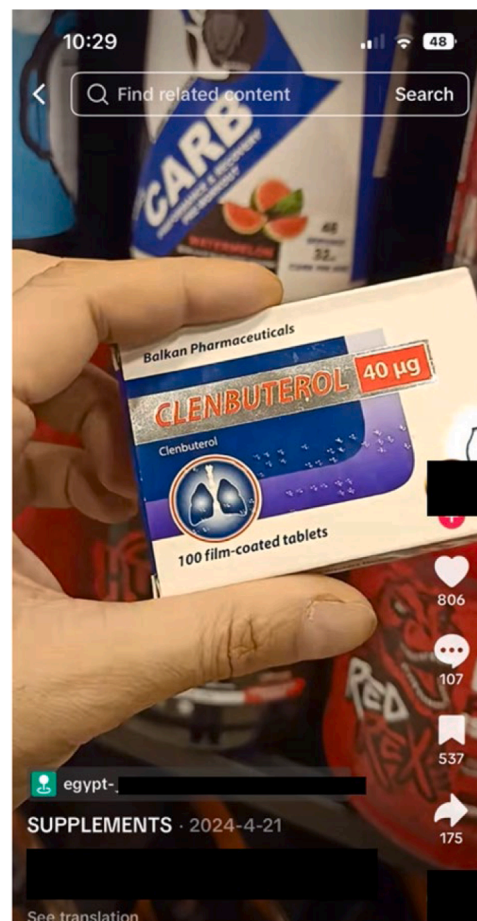


Fig. 1. Advert for Clenbuterol promoted on TikTok (captured June 2025).



were sourced within gyms, where products were exchanged face-to-face (Gibbs, 2023b). Under this mode of distribution, access remained largely hidden from public view, typically restricted to individuals directly involved in their sale or purchase. The emergence of online forums marked an early shift in supply dynamics, increasing exposure to IPEDs (Gibbs, 2023b; Turnock & Townshend, 2022). However, such forums were predominantly frequented by hardcore bodybuilders or highly engaged fitness enthusiasts, meaning that IPED use remained relatively niche and outside mainstream visibility, albeit normalised within those specific communities (Monaghan, 2002). In contrast, the advertisement and sale of clenbuterol via social media represents a more recent phenomenon, significantly broadening exposure and market reach, as noted by Cox et al. (2023). While this trend applies to a range of other IPEDs, including many AAS (Cox et al., 2023; Gibbs, 2023b), clenbuterol is particularly prominent across major, publicly accessible platforms such as TikTok and Instagram.

Another key factor in understanding how social media platforms enhance the availability and accessibility of clenbuterol is the role of “IPED influencers” (Cox et al., 2023). These influencers wield substantial social power over their followers, selling IPEDs while simultaneously reinforcing both the perceived attractiveness and perceived necessity of these substances through implicit and explicit marketing strategies (Cox & Paoli, 2023; Cox & Piatkowski, 2024). By distributing discount codes, influencers expand access to IPEDs among international audiences, reaching millions worldwide (Paoli & Cox, 2024; Gibbs, 2023b). This amplifies product visibility and facilitates broader availability. In the present study, influencers were observed sharing short videos (30–60 seconds) featuring personal reviews of clenbuterol, accompanied by before-and-after photographs illustrating body transformations (e.g., fat loss, increased leanness), alongside the provision of discount codes. Additionally, novel forms of online advertising were identified, including competitions designed to further promote

clenbuterol across wider segments of online fitness communities (Fig. 2).

The weight loss challenge encourages participants to use clenbuterol (40 µg tablets) over a 90-day period and upload before-and-after photographs. Prize money is awarded for the most impressive transformations, with third place receiving \$500, second place \$1000, and first place \$1500. This represents a novel form of marketing that increases both access to and visibility of substances such as clenbuterol. Concerningly, this approach not only promotes the drug to wider segments of society but also actively downplays or ignores associated health risks, presenting clenbuterol as safe and socially acceptable.

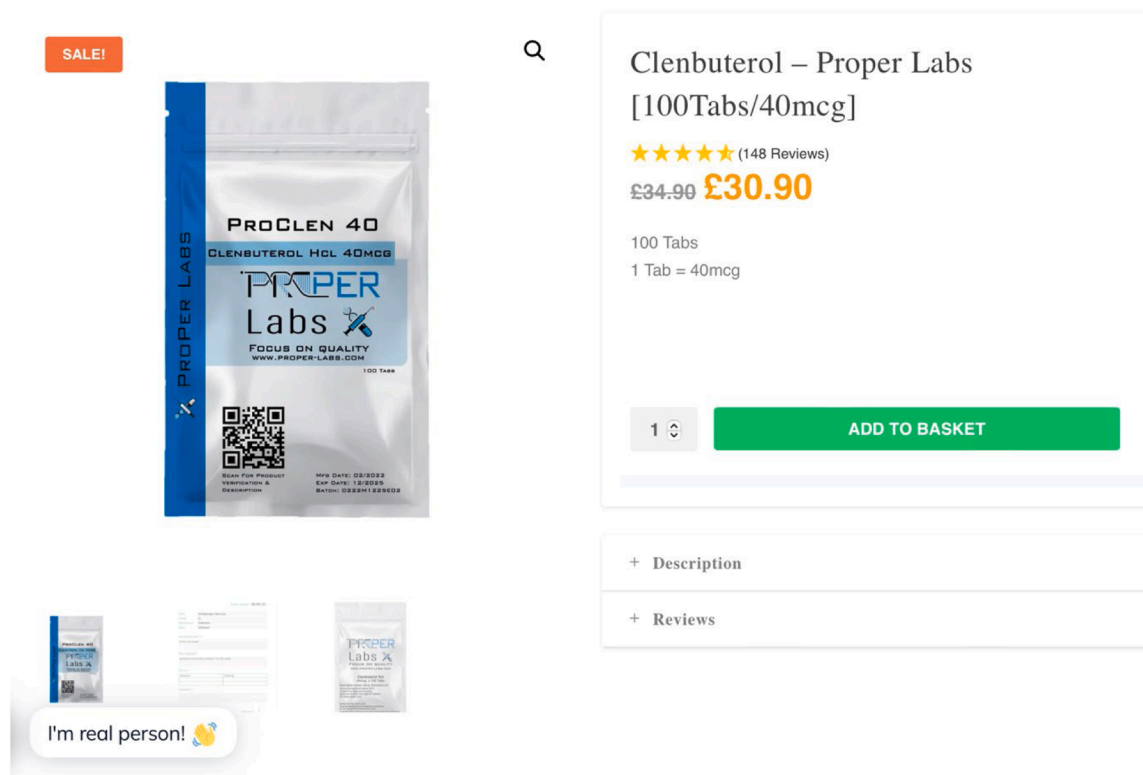
The open and public nature of these advertisements erodes the perceived deviance associated with these substances, bringing them out of the shadows and into socially visible spaces, thereby underpinning their increased availability, often with direct purchase links provided by influencers. Moreover, as more influencers seek to monetise their online presence, many actively share multiple sourcing links to facilitate IPED purchases, enhancing their earning potential while reducing traditional barriers to supply and expanding consumer access. The combination of appealing discounts and the relatively low cost of clenbuterol renders these promotions particularly persuasive, likely encouraging individuals to purchase and use such substances. For example, one influencer promoted a packet of 100 clenbuterol tablets (40 µg) at a reduced price of £30.90, accompanied by 148 customer reviews averaging 4.5/5 (Fig. 3).

Collectively, through influencer networks, online marketplaces, and informational exchanges on social media, these developments have increased access to and availability of substances such as clenbuterol, bypassing traditional regulatory controls. Consequently, this contributes to the normalisation of these substances and highlights novel and emerging dimensions of the normalisation perspective.



Fig. 2. Captured on Instagram, a 90-day weight loss challenge using clenbuterol (captured June 2025).

Home / Shop / All / Best Sellers HOMEPAGE / Clenbuterol – Proper Labs [100Tabs/40mcg]



**SALE!**

**PROCLEN 40**  
CLENBUTEROL HCL 40MCG  
**PROPER Labs**  
FOCUS ON QUALITY  
WWW.PROPER-LABS.COM  
100 Tabs

**Clenbuterol – Proper Labs**  
**[100Tabs/40mcg]**

★★★★★ (148 Reviews)

£34.99 **£30.90**

100 Tabs  
1 Tab = 40mcg

1 **ADD TO BASKET**

+ Description

+ Reviews

I'm real person!

Fig. 3. 100 tablets of (40mcg) Clenbuterol sold online for £ 30.90 (captured June 2025).

## 2.2. Cultural accommodation

Another key aspect of the normalisation perspective concerns increasing cultural accommodation, whereby substances are represented more frequently and positively within media and broader cultural narratives (Pennay & Measham, 2016). For such information to circulate widely and positively, however, it must first have a platform where specific narratives can be produced, shared, and exchanged.

In this study, we identified social media as playing a central role in this process, functioning as an information hub and a space where

narratives are initially introduced across digital landscapes before diffusing into wider society. Platforms such as YouTube, TikTok, and Instagram not only facilitate but also host content related to clenbuterol, thereby serving as sites where cultural accommodation is cultivated and where broader narratives are allowed to develop, gain traction, and proliferate. These dynamics underscore the transformative role of social media and signal a shift in previous understandings of this aspect of the normalisation perspective.

Influencers play a central role in this process, producing and disseminating videos that contribute to the growing cultural acceptance



Fig. 4. Influencer video on YouTube covering clenbuterol myths.

of clenbuterol. In doing so, they facilitate its diffusion beyond subcultural boundaries and position it as a normalised, rather than deviant, component of fitness culture. Each of the social media platforms examined enables novel forms of communication, allowing influencers to creatively foreground their messages and capture the attention of broader and more heterogeneous audiences (Fig. 4).

The video, uploaded by an influencer with over 2 million subscribers, was 4 minutes and 4 seconds in duration, had received more than 230,000 views, and accumulated over 4300 likes. In their efforts to attract viewers, influencers are incentivised to produce content that is engaging, easily comprehensible, and readily consumable, echoing earlier claims made by Cox and Paoli (2023). Such narratives diffuse rapidly across online fitness communities and influence wider segments of society, reinforcing positive portrayals that shape perceptions and patterns of use.

Influencers also utilise creative and novel tools, including AI-generated content, which simplifies production while generating engaging material that captivates audiences and reinforces messages concerning drug use. Moreover, as influencers often have vested interests in the substances they promote, benefiting financially from their sale and purchase (Cox et al., 2023; Gibbs, 2023a), they tend to present these drugs in a favourable light, thereby shaping broader perceptions and beliefs. Such narratives are likely to diffuse widely across the digital landscape, permeating fitness communities and fostering positive perceptions of use, ultimately facilitating cultural accommodation. Recognising the social power and capital (socio-cultural and chemical) that these individuals possess (Cox et al., 2025a; Piatkowski et al., 2024b), it becomes evident how their content reinforces positive narratives associated with drugs such as clenbuterol and contributes to their broader, more frequent, and more favourable representation online.

Although platforms such as Instagram and TikTok have introduced restrictions aimed at prohibiting both “harmful” and “illegal” activities, measures that could, in theory, limit the normalisation of IPEDs by reducing user exposure, TikTok simultaneously provides features that appear to undermine these efforts. For example, the platform’s “others searched for” function actively directs its users toward similar content, thereby facilitating continued access and sustained exposure (Fig. 5).

This feature not only facilitates the circulation of related material but also signals a degree of cultural accommodation or tolerance. In this context, social media functions may implicitly legitimise clenbuterol use, as algorithms recommend and promote content that reinforces such practices. Moreover, this “related content” function represents a marked departure from traditional discussions of the normalisation perspective (see Parker & Measham, 1994). Indeed, it is unique to social media environments and underscores how digital landscapes differ fundamentally from earlier conceptualisations of the normalisation perspective.

Drawing the evidence together, it appears reasonable to suggest that certain IPEDs, including clenbuterol, have become increasingly socially accepted, albeit unevenly, within fitness and bodybuilding cultures. This is demonstrated not only through the proliferation of IPED-related content and peer-to-peer promotion (Cox et al., 2023; Paoli & Cox, 2024), but also through the emergence of merchandise and clothing lines that explicitly reference or allude to these substances. Such developments reflect the broader cultural integration of drug trends within contemporary fitness communities (Fig. 6).

Advertised on YouTube, a mainstream digital platform, T-shirts bearing various IPED-related slogans were identified. One such slogan, “EAT CLEN [clenbuterol], TREN [trenbolone], HARD”, was marketed as a sponsored product and reflects the ongoing normalisation of IPED use. This example highlights the emergence of a consumer market for clothing that openly references and promotes specific substances, including clenbuterol. Such evidence further reinforces the argument that IPEDs in general, and particular compounds such as clenbuterol, are becoming increasingly socially accepted within certain segments of the fitness community.

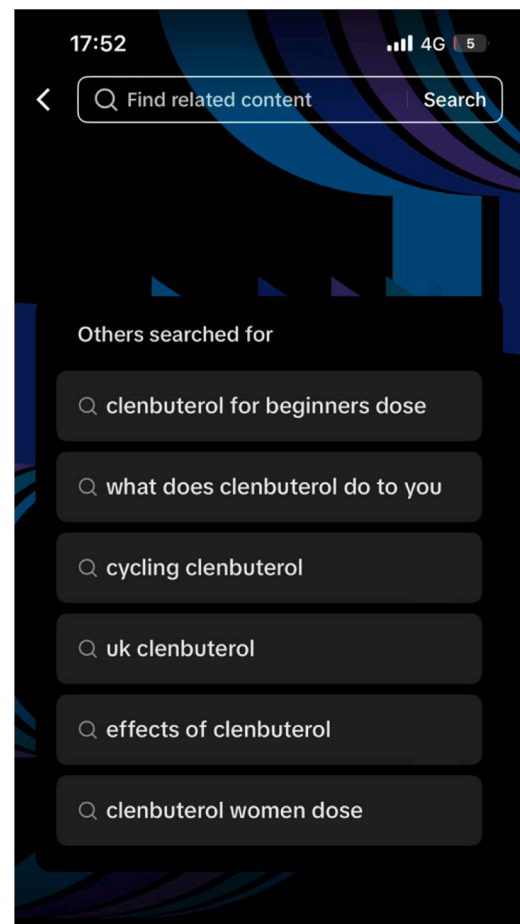


Fig. 5. TikTok ‘others searched for’ function, granting increased and facilitated access to similar search terms (captured June 2025).

### 2.3. Risk perception

Another key aspect of the normalisation process, according to Penney and Measham (2016), concerns risk perception, that is, a decline in the perceived dangers associated with a substance. While tracing a measurable decline in the perceived risks of clenbuterol was beyond the scope of this investigation, it is reasonable to suggest that social media, through its facilitation of information creation and dissemination, may contribute to shifting perceptions of risk.

Importantly, discussions concerning IPEDs were once largely confined to hardcore gyms and online bodybuilding forums (Turnock & Townshend, 2022). However, the emergence of social media platforms has created a novel space for the fitness community to communicate and share information, significantly expanding the reach of such narratives beyond hardcore bodybuilders and into broader segments of society, thereby shaping risk perceptions. For example, within the present investigation, claims related to clenbuterol such as: “You might get some cramping but aside from that, it is pretty side-effect free” [...] “it is a really good tool to burn fat with few side effects – assuming you don’t have any heart issues” [...] and “as a whole, I think it is very effective, very safe and I think you can use it 12–16, 12–18, even 12–20 weeks with no problem whatsoever” explicitly downplay the concept of risk. Notably, these claims, hosted on the YouTube channel of an influencer with over 330,000 subscribers, attracted more than 582,000 views, 11,000 likes, and 1600 user comments. Such figures illustrate the potential for this type of information to “snowball” beyond the tight subcultures traditionally associated with hardcore bodybuilding and to permeate more heterogeneous audiences. This underscores both the scale and reach of social



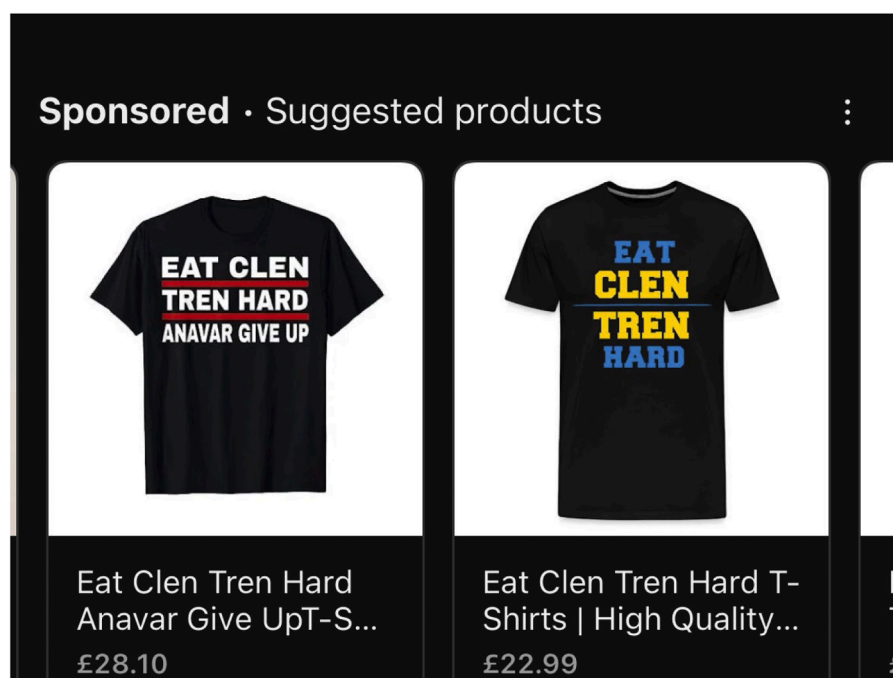


Fig. 6. Clenbuterol and Tren T-Shirt advertised as 'Sponsored - suggested products' on YouTube views (captured June 2025).

media content in shaping perceptions of clenbuterol's risks and highlights a marked departure from traditional understandings of the normalisation perspective (Pennay & Measham, 2016). Of particular concern is the expanding heterogeneity of audiences exposed to such content, as younger or less informed individuals may be especially vulnerable to risk when health harms are minimised or trivialised in this way.

Further evidence of a potential softening of risk perceptions emerged from an overemphasis on the benefits of clenbuterol, often coupled with minimal discussion of health harms and selective guidance on how to mitigate them. Against this backdrop, it is easy to see how repeated exposure to such content could shift perceptions of risk over time, rendering clenbuterol an attractive option for individuals seeking fat loss and increased muscularity. For instance, videos frequently described common side effects, such as "shakes," "tremors," "anxiety," and "increased body temperature", framing these symptoms as routine, manageable, or even positive indicators that the drug was "working" and effectively promoting fat loss. However, such narratives are misleading; tremors, for example, are typically caused by  $\beta_2$ -adrenergic overstimulation (Cazzola & Matera, 2012). These claims were viewed over 250,000 times, likely influencing audiences beyond the initial viewers and permeating wider segments of the bodybuilding and fitness community, highlighting the problematic nature of online misinformation related to IPEDs (Cox et al., 2023). This evidence is particularly concerning, as it demonstrates that misinformation may be normalising the acceptance of harm, framing adverse effects as an anticipated and routine aspect of clenbuterol use.

#### 2.4. Social accommodation

A further dimension of the normalisation perspective, as defined by Pennay and Measham (2016), is social accommodation, whereby peers, families, and institutions begin to accept or tolerate a given behaviour. We contend that social media platforms have intensified this process by providing highly visible spaces for content relating to drug-related practices, including the use of clenbuterol and other IPEDs. Online fitness communities, influencer culture, and algorithm-driven content circulation create echo chambers in which substance use is not only

discussed but framed as a legitimate, and at times desirable, means of achieving idealised bodily standards. For example, an Instagram post presenting information about clenbuterol in a cartoon format underscores its growing acceptance and normalisation within online communities (Fig. 7).

The post, liked by over 2,500 users, generating more than 80

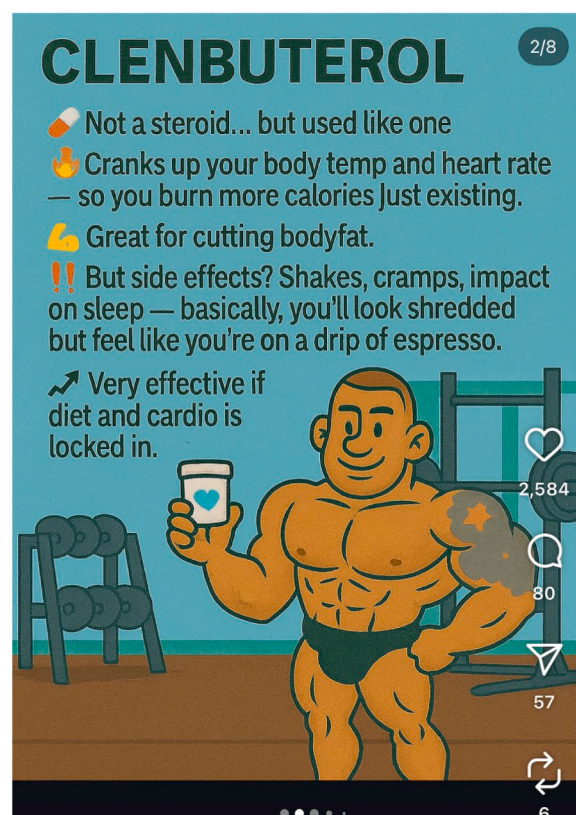


Fig. 7. Instagram post on Clenbuterol (captured June 2025).

comments and directly shared 57 times, underscores the fluid nature of social media communication and its role in cultivating social accommodation. Indeed, social media platforms facilitate increased exposure to drug-related content and contribute to the gradual acceptance of these behaviours by peers and, indirectly, by families and institutions exposed to the discourse. The rapid and wide-reaching dissemination of such content amplifies the visibility of enhancement practices, rendering them seemingly routine and socially sanctioned. In this way, social media accelerates and entrenches processes of social accommodation, lowering perceived risks and reshaping cultural norms surrounding substance use.

Increased visibility shifts IPED use from hidden or deviant behaviour to practices that are more openly recognised and discussed. On social media platforms, influencers draw upon their ‘body capital,’ that is their highly muscular and aspirational physiques, to generate influence and income (Cox et al., 2023; Cox et al., 2025a). For example, YouTube influencers create and upload videos providing step-by-step use protocols, framing clenbuterol as a legitimate tool for body transformation, fat reduction, and enhanced leanness: “Start at the lowest possible dose, 10 mg per day” [...] “if you are shaking, don’t increase the dose. Then, slowly up the dose, not by much, 5 mg per day, there’s no reason to double it.” While such information may reduce health harms, it also fosters a sense of shared legitimacy, presenting clenbuterol as an accepted enhancement

tool rather than a deviant aspect of fitness culture. In this sense, influencers draw upon their ‘chemical capital,’ that is their accumulated knowledge and experience with IPEDs (Piatkowski et al., 2025; Piatkowski and Cox, 2024), to guide and shape wider perceptions and beliefs. Our findings underscore the centrality of the normalisation process in understanding IPED use and provides novel insights into its evolving, dynamic facets within contemporary society.

## 2.5. User identity

Finally, we draw upon the concept of user identity, which refers to how individuals who consume drugs perceive themselves, and are perceived by others, in relation to their drug use (Pennay & Measham, 2016). Historically, IPED use was highly stigmatised by sections of society, driven in part by media narratives that framed people who use these types of drugs as deviant, aggressive, or violent (Mulrooney et al., 2019; Piatkowski et al., 2025a). However, social media continues to (re) shape perceptions of IPEDs, transforming them from being seen solely as deviant, risky, or problematic into increasingly ordinary, functional, and socially acceptable components of fitness culture.

Within the current investigation, social media has emerged as a key site where the identities of individuals who use clenbuterol are formed, legitimised, and normalised. On platforms such as Instagram, TikTok,

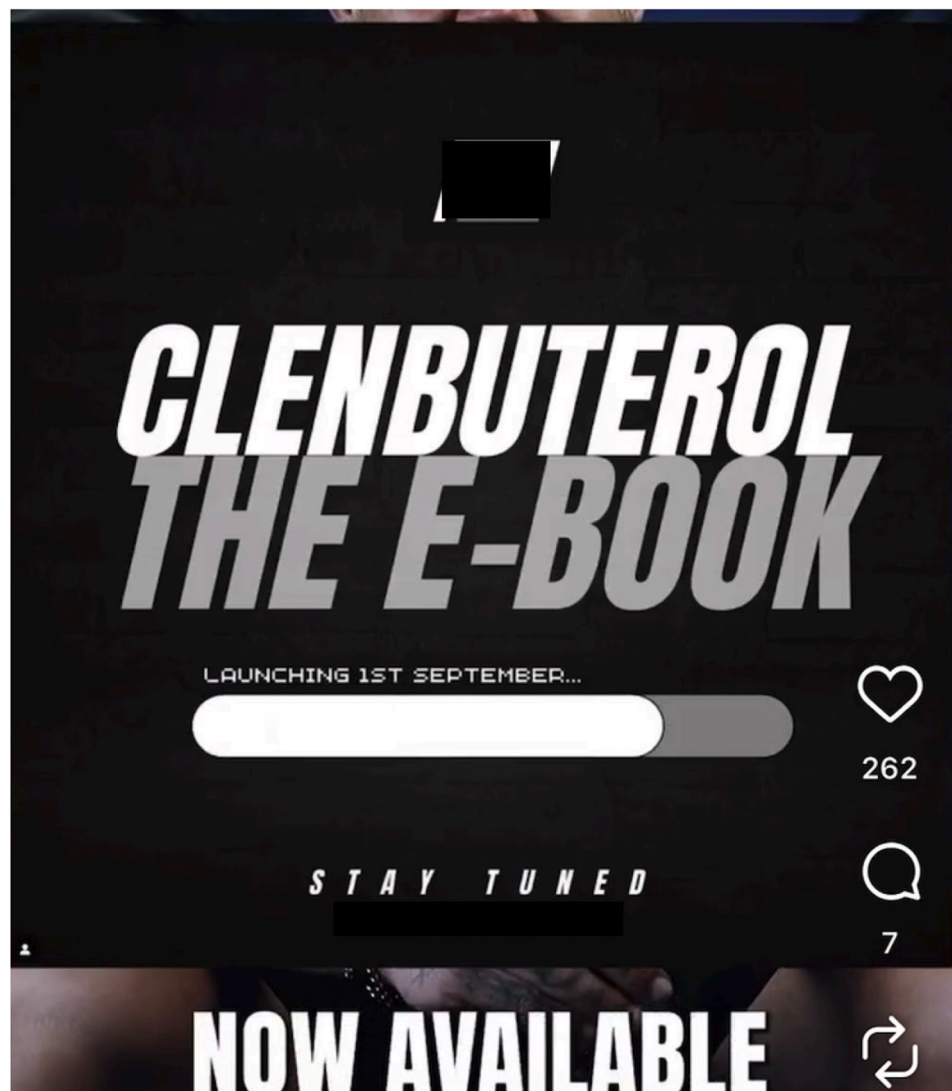


Fig. 8. Instagram post on advertising Clenbuterol (captured July 2025).

and YouTube, clenbuterol use is framed not as deviant but as an integral part of a disciplined fitness lifestyle. Transformation posts, “cutting cycle” tutorials, ‘Clenbuterol E-Books,’ and peer-to-peer harm reduction advice collectively present consumers as knowledgeable, responsible, and committed to self-optimisation. By sharing detailed insights into their experiences and receiving validation (e.g., likes, shares, comments) from like-minded community members, individuals collectively cultivate identities paralleling those of serious athletes or fitness enthusiasts, rather than stigmatised and irresponsible “juice heads” (Cox et al., 2024). This reframing shifts clenbuterol consumption from the margins of deviance toward a socially accommodated practice within specific subcultures, characterised by meticulous planning, preparation, and resource investment in pursuit of human enhancement (Fig. 8).

Above, advertised and sold on Instagram, is an E-Book on clenbuterol. The post had been liked 262 times and received 7 user comments. This type of online communication underscores the nature of digital networks and their role in reshaping societal perceptions of substances such as clenbuterol and the individuals who use them. Although mainstream media narratives continue to pathologise clenbuterol as dangerous and illicit, producing tensions in identity negotiation (Piatkowski et al., 2020; Piatkowski et al., 2024) and, as scholars suggest, potentially limiting harm reduction efforts (Cox et al., 2024), social media platforms provide a space for individuals to navigate these competing discourses. People who use IPEDs often leverage platform functionalities to challenge stigma and assert legitimacy. In this way, social media not only increases visibility for clenbuterol-related practices but also actively contributes to the normalisation of user identity, embedding enhancement drugs within broader cultures of health, fitness, and self-improvement.

## 2.6. Harm reduction: the way forward when coming to terms with normalisation

A harm reduction approach to IPED use is both an ethical imperative and a practical necessity, particularly concerning substances such as clenbuterol, which carry significant health risks, including the potential for death (Dufayet et al., 2020; Kumari et al., 2023; Lehmann et al., 2019). In contrast to zero-tolerance or punitive frameworks, such as anti-doping policies and legal enforcement, which often perpetuate stigma and may exacerbate the health risks associated with IPED use (Henning & Andreasson, 2022; McVeigh & Bates, 2022), harm reduction strategies recognise that many individuals will continue to use these substances despite regulatory, legal, or health-related concerns (Hawk et al., 2017). Accordingly, harm reduction prioritises the minimisation of adverse outcomes over moral condemnation, social exclusion, or framing use as inherently deviant.

The ongoing and increasing normalisation of IPED use further underscores the urgency of advancing harm reduction efforts in this domain. Currently, such interventions remain underdeveloped, fragmented, and largely inadequate in addressing the complex needs of people who use IPEDs (Bates et al., 2021; Cox et al., 2024; Cox et al., 2025b; Kimergård & McVeigh, 2014a; Piatkowski et al., 2022), who seek to maximise drug efficacy while minimising associated health harms. From an ethical standpoint, principles of autonomy and beneficence support individuals’ right to make informed decisions about their bodies while obliging health professionals and policymakers to mitigate potential harms (Beauchamp & Childress, 1994). Yet, research continues to document that healthcare providers often stigmatise individuals who use IPEDs or lack the training to provide appropriate support for this population (Rops et al., 2022; Yu et al., 2015).

Academic literature increasingly emphasises the need for non-judgemental, evidence-based interventions, including access to sterile injecting equipment (needle and syringe programmes (NSPs)), safer-use education, and open dialogue with medical professionals (van de Ven et al., 2022). Central to these recommendations is the engagement of individuals with living-lived experience, who possess significant

‘chemical capital’ (Piatkowski et al., 2024b; Piatkowski & Cox, 2024) and are often perceived as more knowledgeable and trustworthy than healthcare professionals (Harvey et al., 2019, 2020). Harm reduction initiatives should build upon the influential role of social media within IPED communities, drawing on concepts of normalisation and the risk environment to inform and underpin intervention strategies. Such efforts should leverage the online IPED space, where information is widely disseminated and digital engagement can help challenge and reduce the stigma that has historically deterred individuals from seeking support.

Information provision may include the specific risks and benefits associated with clenbuterol use. For instance, bodybuilders typically ‘cycle’ clenbuterol over short periods, often 4 to 6 weeks, followed by an ‘off-cycle’ period of at least 4 to 6 weeks (Llewellyn, 2011). Moreover, slow and incremental use is advised to monitor potential adverse health outcomes and adjust dosage accordingly. Consumers also monitor body temperature during the ‘on-cycle’ phase, as clenbuterol can increase temperature by 0.5 to 1 °C, or more. When body temperature begins to normalise, a marker of developing tolerance, consumers tend to discontinue use (Llewellyn, 2011). Thus, the dissemination of such practical information is essential to better inform and educate both potential and current consumers of IPEDs. Moreover, mechanisms to integrate this knowledge with healthcare provision, including within NSPs, should be considered to strengthen support for this population.

## 3. Conclusion

Social media plays a highly influential role in the normalisation of clenbuterol, a specific IPED commonly used for weight and fat loss. These findings both reflect and extend previous arguments regarding the broader normalisation of IPEDs and AAS. Notably, however, given the documented risk of death associated with clenbuterol misuse within bodybuilding communities, its diffusion into broader fitness populations is a significant concern. The digital landscape introduces novel and complex modes of communication that shape emerging health risks—risks that are distinct in that they are not confined to physical settings. Consequently, the online environment presents unique challenges and raises contemporary questions about how such risks are perceived, communicated, and addressed. We advocate for increased investment and governmental support for the IPED-using community, particularly through harm reduction strategies that leverage social media as a vehicle for evidence-based public health interventions, grounded in living-lived experience.

## CRedit authorship contribution statement

**Luke Cox:** Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Tim Piatkowski:** Writing – review & editing, Writing – original draft, Investigation, Conceptualization.

## Declaration of competing interest

The authors declare no conflicts of interest related to this work.

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