Unveiling the Shadows - Substance Use Among Para-Athletes: A Qualitative Study with Swiss Elite Para-Athletes

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ABSTRACT

This qualitative study investigated non-doping-related substance use among Swiss elite para-athletes, an area with limited existing research. Through in-depth semi-structured interviews conducted at the beginning of 2023 with 15 elite para-athletes (*N* = 15) from diverse sports and language regions, the study explores athletes' perceptions and experiences of substance use, including both legal (alcohol, nicotine, supplements, medications) and illegal non-doping-related substances (illicit drugs). Overall, interviewed para-athletes reported low levels of non-doping-related substance use, but with differences related to on/off-season, sports, or time of entrance into professional sports. The findings indicate a complex relationship between non-doping-related substance use and para-sports, highlighting both negative impacts on athletic performance and health, and the role of non-doping-related substances in coping with physical pain and stress. Professionalization and doping controls are seen to reduce non-doping-related substance use, promoting healthier lifestyles and heightened awareness of performance and health. The study underscored the need for comprehensive mental and physical health support systems and enhanced educational resources to address substance use within this vulnerable population. The insights gained aim to inform targeted interventions to support the health and well-being of

para-athletes, contributing positively to their sporting careers and overall quality of life.

Keywords

Swiss elite para-athletes, qualitative research, substance misuse, disabled sports, thematic analysis

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Introduction

In recent decades, Paralympic sports have experienced substantial growth in athlete participation, athletic performance, and media attention (Jefferies et al., 2012; Slocum et al., 2015; Tweedy & Howe, 2011; Weber et al., 2022a, 2022b). However, despite this remarkable progress, there is still little research on the mental health of elite para-athletes (Swartz et al., 2019). Moreover, there is a lack of comparative data on elite (non-para) athletes (Olive et al., 2021; Swartz et al., 2019). Additionally, certain well-explored phenomena in elite sports have yet to be investigated in the context of elite parasports. One of these phenomena is (non-doping-related) substance use (e.g., alcohol, tobacco, drugs, etc.). Indeed, like any other population group, individuals with (physical) impairments consume substances, but their consumption patterns may not always match with individuals without disabilities. At the same time, the applicability of findings from regular sports to parasports remains uncertain due to several distinguishing factors in the athletes' circumstances and environments.

In general, reported substance use rates are lower among elite athletes in most sports than in the general population (McDuff et al., 2019; Reardon et al., 2019). However, there are several exceptions, e.g., particularly in the off-season, elite athletes show higher rates of binge drinking than non-athletes (Dietze et al., 2008; Exner et al., 2021; McDuff et al., 2019; Reardon et al., 2019). Furthermore, factors such as gender, sport, age, and time of the season influence variations in substance use (McDuff et al., 2019; Reardon & Creado, 2014). There have been reports that both elite athletes and non-athletes use and abuse substances for similar reasons (McDuff et al., 2019; Reardon, 2021). According to McDuff et al. (2019, p. 755), reasons for initiating recreational substance use include «experimentation; socialization; pleasure; self-treatment strategies, including stress relief, to reduce pain and negative emotions, increase alertness and energy, and improve social self-confidence; and performance enhancement.»

However, elite athletes must deal with sport-specific stressors, such as pressure to perform, injuries, physical pain, and the group dynamics in team sports (Exner et al., 2021; Markser, 2011). These psychological and physical challenges can lead to increased mental health problems (Röthlin et al., 2023) and risk-taking behaviors (Exner et al., 2021; Hughes & Leavey, 2012). Furthermore, these challenges may contribute to the adoption of maladaptive coping strategies, such as substance abuse. In fact, this issue has been documented among several sports icons (Brown & de Matviuk, 2010; Claussen & Seifritz, 2022; Palmer, 2018).

But, to the best of our knowledge, there are no studies on (non-doping related) substance use in elite para-athletes from any country. Given that para-athletes might be more vulnerable to developing maladaptive coping strategies because of the additional life challenges and stressors compared to athletes without disabilities (e.g., stigma, trauma, challenges before the training and after, transportation challenges, etc.), there might be a higher risk contributing to the onset of addiction (Kiselev, 2023).

Among this, especially in parasports, para-athletes are frequently in need of medication, and some of them might be considered as a psychotropic or/and performance-enhancing substance (at the same time).

Considering that para-athletes may represent a vulnerable population in terms of developing maladaptive coping strategies as well as substance misuse (Kiselev, 2023; Lazarus, 1984), the coping theory, as described by Lazarus & Folkman (1984), may explain substance use as a possible (maladaptive) strategy to manage stressors. Applied to para-sports, this framework highlights how the accumulation of sport-specific and disability-related stressors may increase vulnerability to substance use, especially in the absence of sufficient psychosocial resources or coping alternatives. Therefore, this study builds upon existing research and seeks to extend these insights into the relatively unexplored domain of elite para-sport, since there is currently very little to no information on substance use in this population in Switzerland. The access to this information, however, could be crucial for improving both treatment and prevention of substance use in para-athletes.

Aims

The present study aimed to obtain an initial overview of the issue as well as an understanding of athletes' perceptions of substance use in Swiss elite parasports. Based on the theoretical framework outlined above and the findings from previous research, we formulated the following guiding research questions, which also served as the foundation for the semi-structured interviews conducted in this study:

i.a. What do Swiss elite para-athletes understand by substance use?

i.b. How do they assess its dangers?

ii. How do athletes evaluate the situation regarding substance use in Swiss elite para- sports?

iii. Do athletes see a connection between substance use and para-sports?

iv. From athletes' perspectives, is there a connection between professionalization and substance use?

v. How do athletes view and assess alcohol use among Swiss elite para-athletes?

vi. What resources are available to para-athletes to prevent and/or control substance use?

Methods

The study was conducted as a master's thesis study in psychology at the University of Zurich. It is one of a series of studies examining mental health and substance use in (Swiss) elite parasports (Kiselev et al., n.d., in preparation, 2025, under review; Lüdi et al., 2023).

Given the absence of comparable studies or publications exploring the viewpoint of para-athletes on the study topic, a cross-sectional, qualitative design employing in-depth semi-structured interviews was chosen.

Setting

In Switzerland, there are over 120 disabled and wheelchair sports clubs. These are managed by three major umbrella organizations – PluSport Disabled Sports Switzerland, Swiss Wheelchair Sports [Rollstuhlsport] (SWS), and Procap Sport. Together, they offer approximately 650 regular (usually weekly) physical activity and sports programs, along with nearly 160 sports camps (averaging one week per camp) annually. Altogether, these club activities enable movement and sports opportunities for thousands of people with disabilities in Switzerland (Kiselev et al., 2022; Kiselev &

Loosli, 2019). These sports groups form the basis for the selection of professional Para-sports.

Swiss Paralympic (SP) manages professional para sports in Switzerland, a co-joint organization of PluSport and SWS. However, the athletes are strongly associated with each organization depending on the form of participation in a competition (wheelchair/sitting = SWS vs. others = PluSport). Both organizations prepare para-athletes and support their participation in the major competitive championships (under the guise of SP). Despite this, in Switzerland, the number of professional para-athletes is modest, hovering around 150 people. After deducting those who are still in their youth and those in the development phase, the remaining group consists of about 60 top para-athletes nationally.

Participants

Following the previous research in the field and in accordance with expert literature, we aimed at interviewing 15 professional para-athletes (Cody et al., 2022; Episkopou et al., 2019; Guest et al., 2011; Jensen et al., 2013; Kiselev et al., 2020; Lincoln & Guba, 1985; Murray et al., 2012; Nowell et al., 2017; Schebesch-Ruf et al., 2019; Sparkes & Smith, 2013; Weber et al., 2022a, 2022b). To gain a more comprehensive view of substance use in parasports, the goal was to recruit adult active para-athletes representing different sports, different impairment groups, and different language regions of Switzerland to obtain a sample with maximum variation.

Interview questions

Since there was no interview guide for the topic of substance use among elite para-athletes, one was developed in co-production with professional coaches of para-athletes, experts in sports psychiatry and addiction medicine, and two former Swiss professional para-athletes. The guide was directly based on the research questions of this study, general research on the topic presented in the introduction and informed by prior studies with comparable qualitative designs (Lüdi et al., 2023; Weber et al., 2022a, 2022b). It was further aligned with the assumptions of coping theory, particularly in relation to how athletes may manage sport-specific and disability-related stressors through (mal)adaptive strategies such as substance use (Lazarus, 1984).

Procedure

After Christmas 2022, PluSport reached out to a group of para-athletes (n = 29), while SWS contacted approximately 30 para-athletes (exact number undisclosed). The initial email and one reminder included the first author's email address and phone number, allowing interested athletes to contact the first author directly, thus ensuring anonymity regarding their respective sports federation. The interviews were conducted online in German, Italian, and French between January and early March 2023.

The interviews commenced following the approval and acceptance of the informed consent, which included obtaining the participant's consent to audio-record the conversation. Once the interviews had been transcribed, all corresponding audio files were responsibly disposed of.

Analysis

The thematic analysis was conducted using the NVivo software program (Version 14) from QSR International. The methodology suggested by Gale et al. (2013) provided a guideline for executing the thematic analysis. The coding process commenced after transcription of all interviews and subsequent familiarization with the transcribed content. To safeguard participant anonymity, pseudonyms replaced all real names, and all identifiable data was compiled into non-specific groups. A coding framework was established based on the review of four selected interview transcripts. This framework was examined and revised, where required, through collective discussions with the research team members before its application to the remaining interview data. During the analysis, any needed changes to the hierarchical structure of codes were made to enhance the coding framework. An external reviewer, who was experienced with NVivo and had no prior

involvement in the initial coding phases, verified the finalized codes. Any slight discrepancies discovered were deliberated within the team, and appropriate adjustments were implemented if necessary.

Ethics

The study was approved by the Ethics Committee of the Faculty of Arts and Social Sciences of the University of Zurich (approval no.22.10.9).

Results

Demographics

The study involved interviews with *n* = 15 Swiss para-athletes, consisting of *n* = 4 females and *n* = 11 males, with an average age of 33.8 years (SD = 12.8). The response rate among contacted para-athletes was approximately 25%. The interviews lasted an average of 28 minutes, with a duration of between 20 and 45 minutes. These athletes, divided into eight German-speaking, five French-speaking, and two Italian-speaking individuals, collectively represented nine distinct summer and winter sports. The summer sports category included participants from Para Athletics (*n* = 3), Para Badminton (*n* = 2), Para Climbing (*n* = 1), Para-Cycling (*n* = 2), Para Shooting (*n* = 1), Para Swimming (*n* = 1), and Wheelchair Tennis (*n* = 2). Winter sports were represented by Para Alpine Skiing (*n* = 2) and Para Snowboarding (*n* = 1).

Among these athletes, *n* = 6 had the experience of participating at least once in Paralympic Games, while *n* = 9 had participated in a World Championship at least once. There were also six athletes who, despite not yet having the opportunity to participate in a major international championship, had experience in international circuits or tournaments. Significantly, *n* = 6 of these athletes had the distinction of winning at least one medal at a major international event such as the Paralympic Games, World Championships, or European Championships.

The origin of impairment varied among the athletes, with *n* = 9 having their impairment since birth or due to an illness (e.g., visual impairment, paraplegia, lower leg amputation), and *n* = 6 acquired their impairment due to an accident, resulting in conditions such as paraplegia, tetraplegia, or brain injury.

Results related to guiding questions

In order to provide a comprehensive summary of the results, we have structured our findings into six key themes inspired by the research aims: [i.a] the understanding of substance use including [i.b] the perceived assessment of the dangers of certain substances; [ii] the perception of the situation regarding substance use in Swiss elite para-sport; [iii] the perceived relationship between substance use and para-sport; [iv] the perceived relationship between professionalization and substance use; [v] the consideration and assessment of alcohol use among Swiss elite para-athletes; [vi] the investigation of available resources in para-sport to prevent and/or control substance use.

[i.a] Understanding of substance use, incl. [i.b] the perceived rating of the dangers of certain substances

The athletes were initially prompted to provide a definition for the term "substance use" and to list substances that they knew. The results are presented in Table 1. The interviewed para-athletes described the use of both legal substances (such as alcohol, nicotine, supplements, and medications) and illegal substances (such as illicit drugs and performance-enhancing substances (P.E.S.)).

Table 1
Reported self-definition of substance use.

	***n* (%)**		***n* (%)**
Legal Substances	10 (67%)	**Illegal Substances**	13 (87%)
Alcohol	5 (33%)	Drugs	11 (73%)

	n (%)		*n* (%)
Supplements	4 (27%)	P.E.S	11 (73%)
Medications	3 (20%)		
Nicotine	2 (13%)		

Full sample (*N* = 15). P.E.S. = Performance-enhancing substances

In terms of their perceived harm, athletes were subsequently asked to rate the consumption of various substances on a scale ranging from 1 "completely harmless for body and mind" to 10 "very dangerous" with the understanding that the level of harm depends significantly on the quantity consumed. Participants also had the option to indicate that they did not have knowledge about a particular substance. The results are presented in Table 2. Alcohol, nicotine, and cannabis were rated as being less harmful. Cocaine, MDMA, hallucinogens, and opiates/opioids were rated as being more dangerous.

Table 2
Self-evaluation of the harm of different substances (based on 1 – 10 scale)

Substance	***n***	***M***	***SD***
Nicotine	15	6.5	2.0
Alcohol	15	5.7	1.7
Cannabis	14	7.1	2.0
Stimulants	13	8.3	1.6
Cocaine	14	9.1	1.2
MDMA	12	9.0	1.1
Hallucinogens	12	8.9	1.2
Opiates/Opioids	15	8.9	1.7
Anabolic substances	15	8.3	1.9

Full sample (*N* = 15). Likert-scale: 1 – 10 (1 "completely harmless for body and mind" / 10 "very dangerous".

[ii] Perception of the situation regarding substance use in Swiss elite para-sports

The perceived situation of substance use in Swiss elite para-sport is summarised in Table 3.

All participants (*N* = 15) said they either knew para-athletes who consumed alcohol and/or consumed alcohol themselves, mostly occasionally and in moderation. Nicotine use (smoking, snus) was mentioned by twelve para-athletes (*n* = 12). Cannabis use (tetrahydrocannabinol or cannabidiol) was cited by five persons (*n* = 5). An interviewee described the situation as follows:

> The easiest is alcohol. I think it is consumed everywhere, at least a little bit ... like at parties and so on.... I believe nicotine is also something that is consumed ... in certain sports more, in particular sports less. As for the other substances, many are on the doping list, like, for example, cannabis and cocaine ... I think these things usually are consumed less often. And doping (e.g., steroids or something like that), I don't personally know anyone who does that. But you always read about cases in the media where someone has been tested.

Table 3
Reported substance use in Swiss elite para-sports.

Related to the substance	***n* (% *N*)**	**Related to the pattern**	***n* (% *N*)**
Alcohol	15 (100%)	Differences between sports	8 (53%)
Nicotine	12 (80%)	Intraindividual differences	7 (47%)
Cannabis	5 (33%)		
P.E.S.	5 (33%)		
Medications	4 (27%)		
TUE	3 (20%)		

Full sample (*N* = 15). The percentages shown in the table do not correspond to the prevalence of substance use but to the people who mentioned that topic. TUE = Therapeutic Use Exemption. P.E.S. = Performance-enhancing substances

Four people (*n* = 4) mentioned pharmaceutical drugs, referring mainly to painkillers. An athlete recounted his experience with substances that are usually banned from sports but which he must take for medical reasons:

> There are other substances that you have to take for your physical impairment. And then it's difficult, yes, it's actually officially prohibited, but I need it for my everyday life, so there's already a conflict there.

When an athlete needs a substance because of an illness or a specific medical condition, they are usually able to apply for a therapeutic use exemption (TUE) with the Swiss Anti-Doping Agency. A participant pointed out that some people tend to think that it is easy for para-athletes to obtain a TUE when, in fact, it is a lengthy process involving extensive medical examinations. One-third of the surveyed para-athletes (*n* = 5) were aware (often through the media) of people taking performance-enhancing substances.

More than half of the respondents (*n* = 8) noted considerable differences in consumption across various sports disciplines. In their opinion, some substances, e.g., alcohol and nicotine, are tolerated more in some disciplines than in others, where the negative effects

of these substances on athletic performance are more evident.

Seven para-athletes (*n* = 7) have observed a personal change in substance consumption during their time competing in sports at a high level, e.g., some have stopped smoking and others have drastically reduced their alcohol consumption. A participant stated:

> I had times when I consumed quite a lot, but that's another story. That was a different outlook on life, before elite sport.

[iii] The perceived connection between substance use and para-sports

Athletes discerned various connections, both positive and negative, between substance use and para-sports, as shown in Table 4. The majority of para-athletes see a negative correlation between para-sport and substance use: both because of its negative effects on athletic performance (*n* = 12) and because professionalization has led to increased competition at top athletic levels (*n* = 9), which leaves little room for anything that could inhibit peak athletic performance. In addition to its negative effects on performance, an athlete also emphasizes the health risks (including injuries), particularly in certain sports (e.g., para-alpine skiing), associated with substance use:

> Yes, you can feel it immediately... I've gotten older and I know how my body reacts - and with my impairment... it's even worse... it accentuates things even more... I think your performance is worse, and I'm convinced of that. And on top of that, you're going to take even more risks, so you're even more prone to injury. So, it's not very smart and not helpful. If you ask me, you put yourself in more danger.

Finally, because para-athletes may be more sensitive to health issues, *n* = 2 participants also see a negative correlation:

> Maybe, on the contrary, they (para-athletes) are more careful because they are more aware of health problems. They are people who have had health problems, so they are more attentive to that kind of thing.

Contrarily, potential positive connections were also recognized: one-third of the athletes (*n* = 5) see a potential link between substance use and physical pain, as certain substances can alleviate pain. Twelve participants (*n* = 12) believe that certain athletes may use substances to cope with stress or negative emotions, although most do not personally know someone who does so. Stress and negative emotions are not necessarily linked to sports. An interviewee, for example, sums up his consumption as a coping strategy as follows:

> I think I also do it sometimes to make myself feel better. I do it to relax and to ... yes, against stress, against pain, against pressure.

Table 4
Reported perceived connection between para-sports and substance use.

Perceived connections between para-sports and substance use	***n* (%*N*)**
Negative correlation	14 (93%)
Negative effects on athletic performance	12 (80%)
Negative correlation with professionalization	9 (60%)
Intraindividual differences	7 (47%)
More sensitivity for health issues	2 (13%)

Perceived connections between para-sports and substance use	***n* (%*N*)**
Positive correlation	12 (80%)
Possible correlation with stress and negative emotions	12 (80%)
Physical pain	5 (33%)
Different backgrounds	3 (20%)

Full sample (*N* = 15); Different backgrounds are related to the time of entrance in sports due to disability etiology.

A peculiarity of elite para-sport is that some athletes begin their athletic activity at a high level without necessarily being very athletic before their illness or accident. Three athletes (*n* = 3) suggest that years of consumption before engaging in athletic activity might influence current use. Indeed, there may be athletes who have maintained previous unproductive consumption habits potentially affecting their high-level athletic activity.:

> From my point of view, in Paralympic sports, there are people who had accidents perhaps later in life and were not at all sporty then. But they started a sport after their accidents or after their illnesses, that influence a lot ... I think that there is consumption in such cases, coming from past ... like ... Despite the fact that he started a high-level sport, he couldn't stop smoking.

[iv] The perceived connection between professionalization and substance use

According to over half of the athletes (*n* = 9), the professionalization of para-sport has led to a reduction in substance use. Several factors that emerged in the individual conversations seem to have contributed to decreased substance use (see Table 5).

Three participants (*n* = 3) pointed out that increased professionalization has led to more doping controls, and since the anti-doping regulations prohibit the majority of psychotropic substances, this decrease is natural. An interviewed para-athlete stated the following on this subject:

> Because of professionalization, people are looking more closely. Athletes think about whether or not they take something because if they take something that is on the doping list and then get caught, their career is over. So, people are more aware of what they can and cannot take.

For over a decade, marginal gains have been referred to in top-level athletics (i.e., taking care of every small detail in different areas to achieve a significant overall improvement (Hall et al., 2012)). One can intervene, for example, in nutrition, recovery, sleep, mental training, technology, etc. According to a participant, professionalization has incentivized athletes to have a healthy lifestyle and to take care of the many aspects that can influence performance:

> I would say having a healthy lifestyle ... At a high level, it is also good to have a healthy and balanced diet, sleep well, be physically active, and have enough recovery time. And then, quite frankly, any substance could be directly harmful to me and prevent me from any athletic performance afterward.

Table 5
Reported perceived connection between professionalization and substance use.

Reported connections between professionalization and substance use	***n* (%*N*)**
Reduction of use	9 (60%)
Healthy Lifestyle	4 (27%)
More doping controls	3 (20%)
Marginal gains	3 (20%)
Athlete as a role model	3 (20%)
Increased media interest	3 (20%)
Potential risk for P.E.S.	2 (13%)

Full sample (*N* = 15). P.E.S. = Performance-enhancing substances.

Another outcome of the growth of para-sports is increased media attention towards athletes. Three athletes (*n* = 3) mentioned this development and thus felt a responsibility to be role models. One of them stated:

> Naturally, the bigger it gets, the more controlled you are, the more your image is seen and the more your fans or the people who follow you think of you as a role model, so, in that regard, you have to be careful with the image you show.

While many athletes associated a decrease in recreational substance use with professionalization, two athletes (*n* = 2) observed that increased competitiveness may increase the risk of substance use (that is not necessarily banned) to enhance performance, as one of them said:

> Maybe 20 years ago, they told themselves "Alright, then I'm half-good or half-bad, who cares?" and now, maybe there is someone who says "hey, tomorrow is the most important race, now I have to sleep well, now I'll take a sleeping pill, or now I'll take a painkiller".

[v] View and assess alcohol use among Swiss elite para-athletes

All athletes (*N* = 15) reported consuming alcohol or having seen alcohol consumed in elite para-sports. Almost all of them reported very moderate and occasional alcohol consumption. Although excessive consumption can be detrimental to health and performance, alcohol use is generally widespread and socially accepted in elite para-sports, as well as in society as a whole. In this regard, an interviewee sees a parallel with high-level (non-para) sports, where athletes awarded on the podium often receive a bottle of champagne that they then drink, which does not normally provoke criticism.

While alcohol consumption is usually occasional and not excessive, over half of the para-athletes (*n* = 8) mentioned binge-drinking episodes (see Table 6). An interviewed athlete is astonished at how much alcohol is consumed by some of his teammates in his sport:

> I am - honestly - amazed at how much (alcohol) people consume. It's too much, from my point of view, but it's only too much when the races are over, after the medal ceremonies, or at the afterparty. There, you can't tell that some people are top athletes.

Table 6
Reported alcohol use in elite parasports.

Alcohol use	***n* (%*N*)**
Occasional Alcohol Use	15 (100%)
After race	10 (67%)
Differences between season/off-season	9 (60%)
Party	8 (53%)
Binge drinking	8 (53%)
Differences between sports	8 (53%)

Full sample (*N* = 15).

As with other substances, there are significant differences in the reported consumption of alcohol by athletes of different sports. There are situations where alcohol consumption is higher, for example, after races (especially after important competitions), at parties (e.g., to celebrate after a good performance or a major event), and during the off-season. More than half of the athletes (*n* = 9) mentioned a difference between consumption during the competitive season and during the off-season. Some of the athletes considered the off-season as a time to relax and enjoy things that are usually set aside during the competitive season:

> Yes, but you see, it's the end of the season, ... everything is relaxed. Essentially, you enjoy what you can't do during the eleven months when you train and when you have competitions.

[vi] Available resources in para-sports to prevent and/or control substance use

Eleven athletes (*n* = 11) identified self-responsibility as the primary factor for preventing and controlling substance use (see Table 7). Among the formal measures for preventing and controlling substance use, the doping controls conducted by Swiss Sport Integrity were the most frequently mentioned by the respondents (*n* = 9).

Table 7
Reported resources and measures to prevent and/or control substance use.

Resources and measures	***n* (%*N*)**	**Point of contact**	***n* (%*N*)**
Self-responsibility	11 (73%)	Swiss Sport Integrity	6 (40%)
Swiss Sport Integrity	10 (67%)	(Team) Doctor	4 (27%)
Doping controls	9 (60%)	Psychologist	4 (27%)
High-performance goals	5 (33%)	Local associations	4 (27%)
Prevention by sports federations	3 (20%)	Would search online	4 (27%)
Contract with sports federation	3 (20%)	Coach	2 (13%)
Entourage	3 (20%)	Hotline	1 (7%)

Full sample (*N* = 15).

Three athletes (*n* = 3) consider an athlete's entourage (e.g., family, coach, sports psychologist) a significant resource. Five athletes (*n* = 5) perceive high-performance goals as a resource for controlling substance use: With everyone focused on their individual goals, no one wants to take substances that could negatively influence their performance. An athlete describes his athletic environment as follows:

> In my athletic environment - it's undoubtedly the case - that you're responsible for yourself, that you just have to do your best, and that you realize there's not much room for MDMA trips and whatever.

Other formal measures include prevention campaigns (e.g., "Cool and Clean" by Swiss Olympic and Youth & Sport) and contracts with sports federations (*n* = 3). A participant recalls the points about substance use in the contracts he had to sign with certain federations:

> In any case, every time I signed a contract with a federation, there was always an article warning you about "alcohol in moderation" and reminding you, in general, that "smoking is forbidden".

Athletes were also asked if they knew the points of contact for substance use problems (see Table 7). Six participants (*n* = 6) said they would contact Swiss Sport Integrity. Doctors (*n* = 4), psychologists (*n* = 4), and coaches (*n* = 2) are professionals that respondents would approach in the event of substance use problems. Four athletes (*n* = 4) mentioned local associations that deal with addiction, and one person mentioned a hotline. Four participants (*n* = 4) mentioned not knowing a specific point of contact but would search online to find one. Several athletes said they had little information since they had never come into contact with substance use problems. In this regard, one interviewee:

> I don't know any points of contact. I think I'd go to my doctor first to discuss it and then be better advised. Or I would look on the internet. But I don't know of any.

Discussion

This study aimed to provide a nuanced understanding of substance use among Swiss elite para-athletes, exploring their perceptions, experiences, and the resources available to mitigate and manage substance use. The findings reveal a complex interplay between substance use and the unique pressures faced by elite para-athletes, reflecting broader trends observed in elite sports as well as specific challenges inherent to para-sports.

The para-athletes' understanding of substance use includes both legal (alcohol, nicotine, supplements, and medications) and illegal substances (illicit drugs and performance-enhancing substances). This distinction underscores the athletes' awareness of substance use's broad spectrum and its potential implications on health and performance. The prevalence of alcohol and nicotine use, as reported by the athletes, aligns with the patterns observed in the general population and non-para elite athletes, highlighting the social and cultural factors influencing substance use (McDuff et al., 2019; Reardon et al., 2019).

The study findings suggest that professionalization in para-sports has led to a reduction in substance use, primarily due to increased awareness and the stringent implementation of doping controls. This might be interpreted as a positive development, indicating that professionalization can play a crucial role in promoting healthy lifestyles, high-performance standards and fairness among para-athletes. Furthermore, emphasizing marginal gains and the role of para-athletes as public figures may contribute to a more conscientious approach to substance use, underscoring the importance of maintaining a positive image and role model status in the community.

Athletes perceive a predominantly negative correlation between substance use and para-sport, mainly due to the adverse effects on athletic performance and the heightened risk of health issues and injuries. This perception is consistent with the literature on substance use in sports, where the emphasis on peak performance and health is paramount (Exner et al.,

2021; Markser, 2011). Nonetheless, the acknowledgment of substance use as a maladaptive coping mechanism for physical pain and stress highlights the need for comprehensive mental and physical health support systems for para-athletes. In para-sports, many athletes begin their athletic careers later in life, after an injury or illness. This differentiates them from regular athletes, who generally follow a more linear path from youth to elite sports, focusing heavily on athletic development from a young age. These background differences may contribute to differences in the prevalence of use of certain substances (e.g., nicotine) in this subgroup (Kiselev, 2023).

The nuanced view of alcohol use among Swiss elite para-athletes—recognizing it as both a socially accepted behavior (bringing us back to the social and cultural factors influencing substance use) and a potential risk to health and performance—mirrors the complexities surrounding alcohol consumption in elite sports. The occasional and moderate use reported by most athletes, with some instances of binge drinking, is consistent with literature (Dietze et al., 2008; Exner et al., 2021; Martens et al., 2006; McDuff et al., 2019), reflects broader societal patterns and underscores the need for targeted educational programs addressing the risks associated with alcohol use in high-performance sports settings and with binge drinking. Furthermore, given the fact that some athletes need specific medication (related to their impairment), the issue of alcohol consumption might be even more hazardous due to the potential consequences of (simultaneous) polysubstance use.

The identification of self-responsibility as the primary means of controlling substance use, alongside the role of doping controls and high-performance goals, underscores the importance of personal accountability and structural support in preventing substance misuse. However, the findings also highlight the need for more comprehensive resources and support systems, including enhanced education, accessible points of contact for addressing substance use concerns, and the involvement of athletes' entourages in prevention efforts.

Finally, while participants also described perceived differences in substance use across various para-sport disciplines, we deliberately refrained from naming specific disciplines in the results section. This decision was made to adhere strictly to the descriptive nature of qualitative reporting and to avoid overinterpretation of general statements. Additionally, given the relatively small size and close-knit nature of the elite para-sport community in Switzerland, this choice was also motivated by ethical considerations. Highlighting individual disciplines might unintentionally lead to stigmatization or identification of specific groups, which would be counterproductive to the study's broader aim of informing inclusive and respectful prevention strategies across para-sports.

Limitations

This study has several limitations. The level of the para-athletes in this study was quite heterogeneous: Although all of them represent Switzerland in international competitions, some of the participants won medals at the highest international level (e.g., Paralympic Games, World Championships, and European Championships), while others have only recently entered elite para-sport. On the one hand, this does not allow the results to be generalized for a specific population (e.g., Swiss Paralympic athletes like in the study of Lüdi et al. (2023) or to other countries). However, it provides a variety of valuable information on a phenomenon that has still not been studied.

None of the para-athletes in the sample played team sports. Previous research on non-para-athletes indicates that substance use is higher in team sports than in individual sports (Denault & Poulin, 2018; Exner et al., 2021; Grossbard et al., 2009; Martens et al., 2006). Thus, it is assumed that different results might have been obtained if para-athletes from team sports had been included in the sample.

Given the sensitive nature of the topic, para-athletes with potential substance use issues may have been either hesitant to join the study or to answer truthfully due to concerns about anonymity and potential disclosure of interview content to the associations. A dif-

ferent study design (e.g., an anonymous online survey or interviews with former para-athletes) would have encouraged more participation, and some participants, without fear of consequences, might have responded more honestly to the questions. Finally, some degree of social desirability cannot be ruled out, although efforts were made to reduce the risks. In fact, participants were informed that the interviews would be anonymized, thus making it impossible to link this information to their person or sport.

Furthermore, although we conducted 15 interviews — a sample size in line with qualitative standards in applied health research — this may raise questions regarding thematic saturation and sample diversity. In addressing these concerns, we followed methodological recommendations from the literature and drew on sample sizes used in comparable studies (Braun & Clarke, 2021; Lüdi et al., 2023; Weber et al., 2022a, 2022b).

Regarding diversity, the sample was purposefully constructed to reflect variation in gender, age, language region, type and onset of impairment, as well as representation across both summer and winter sports. However, para-athletes from team sports were not included, primarily due to their underrepresentation in the current elite para-sport system in Switzerland. This may have limited the perspectives related to team dynamics. Nonetheless, the sample captures a broad spectrum of lived experiences and offers a valuable foundation for future research in this underexplored field.

Conclusion

The exploration of substance use among Swiss elite para-athletes offers critical insights into the challenges and pressures unique to this group and suggests that the overall situation concerning substance use is not alarming. By understanding the dynamics of substance use in the context of para-sports, stakeholders can develop targeted interventions to support athletes' health and well-being, ensuring that professionalization continues to contribute positively to athletes' lives and sporting careers. As the field of para-sports continues to evolve, ongoing research and policy development will be essential in fostering environments that prioritize para-athletes' health, safety, and success. Future research on substance use among para-athletes should prioritize comparing their experiences and prevalence rates to those of able-bodied athletes to identify unique challenges and risk factors, and to allow more substantial involvement in prevention measures of regular elite sports according to the inclusion principle. Additionally, validating standardized assessment instruments specifically for the para-athlete population is crucial to ensure accurate and reliable data collection. While our qualitative approach was well-suited for exploring para-athletes' individual perspectives in depth, future studies aiming to assess the prevalence of substance use behaviors on a larger scale may benefit from applying indirect data collection techniques, such as the Randomized Response Technique (RRT) or item count methods. These approaches can reduce social desirability bias and increase response accuracy in sensitive research contexts. However, such techniques require larger sample sizes and structured, mostly quantitative formats, and are therefore not applicable to small-sample, semi-structured interviews aiming for narrative depth.

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