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Risk and Enabling Environments in Sport: Systematic Doping as Harm Reduction

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Abstract

Doping and the use of performance-enhancing drugs (PEDs) are often considered and discussed as a separate issue from other types of substance use, by sporting bodies, politicians, the media, and athletes who use drugs themselves. However, perceptions and understandings of substance use in the sport and fitness world are directly related to those of substance use in the non-sport world. One way the gap between sport and non-sport substance use research can be bridged is to consider sport risk and enabling environments. Similar to non-sport contexts and drug use, it is important to analyse the environments in which doping occurs. This approach allows us to examine the dynamic interplay between risk and enabling factors, as the enabling environment shifts in response to changes produced in the risk environment, and vice versa. There are models of sport environments that have proven effective at both enabling doping by athletes and reducing harms to athletes: systematic doping. This article will use secondary literature in order to review and analyse known cases of systematic doping through the risk and enabling environment frameworks. We argue that these systems responded to anti-doping in ways that protected athletes from the risk factors established by anti-doping policy and that athletes suffered most when these systems were revealed, exposing athletes to the full range of doping harms. Further, we argue that risks within these systems (i.e. extortion, bullying) resulted from the broader prohibitive sport environment that forces doping underground and allows such abuses to occur.

Keywords: risk environment, doping, sport, harm reduction

Risk and Enabling Environments in Sport: Systematic Doping as Harm Reduction

Doping and the use of performance-enhancing drugs (PEDs) are often considered and discussed as a separate issue from other types of substance use, by sporting bodies, politicians, the media, and athletes who use PEDs themselves (Evans-Brown, 2012). There is a more or less clear separation in both public discourse and research on doping between the (elite) sport context and the use of PEDs in society, often connected to the gym and fitness enterprise. A second and even more distinct divide exists between PED use in sports and fitness and the use of illicit recreational drugs. This second distinction is partly related to the sporting context in which doping necessarily exists but is seen as unacceptable, as performance enhancing substances are viewed as a threat to the integrity of sport itself. The prohibition of sport doping is thus constituted in relation to a desire to ensure the value and spirit of modern sport, building on an ideal view of sport in which winners are crowned due to honest excellence in performance and nothing else (Beamish & Ritchie, 2007). Consequently, it is taken for granted that the motives for doping in a sport context are connected mainly to performance enhancement, and so differ from use outside the sphere of modern sport. However, as Coomber (2014) has argued, perceptions and understandings of substance use in the sport and fitness world are directly related to those of substance use in the non-sport world. Doping substances and methods are those that will improve or enhance performance within sport or fitness contexts. Indeed, doping can be understood as a contextually specific substance use practice.

There is an opportunity, then, to focus on the intersectional commonalities between the two types of use and contexts—sports doping and illicit drug use (from here doping and non-sport substance use)—and to apply frameworks from one field of research to the other. One way the gap between sport and non-sport substance use research can be bridged is to consider sport risk and enabling environments. Similar to non-sport contexts and drug use, it is important to analyse the environments in which doping occurs in order to understand: 1) how these environments shape

use behaviours and produce risk; 2) how athlete risks are/can be mitigated. Crucially, this approach allows us to examine the dynamic interplay between risk and enabling factors, as the enabling environment shifts in response to changes produced in the risk environment, and vice versa.

There are models of sport environments that have, in some specific ways, proven effective at both enabling doping by athletes and reducing harms to athletes: systematic doping. Though it is not possible to eliminate all risks to athletes who engage in doping – or to their competitors – and it is still possible for athletes to be abused or harmed, organized doping can reduce some of the risks of PED use. We argue that these systems responded to anti-doping in ways that protected athletes from several of the risk factors established by anti-doping policy and that athletes suffered most when these systems were revealed, exposing athletes to the full range of doping harms. Further, we argue that risks within these systems (i.e. extortion, bullying) resulted from the broader prohibitive sport environment that forces doping underground and allows such abuses to occur. Of course, we cannot ignore the specific sport context in which doping occurs. The uncontested hegemony of anti-doping (Lopez, 2017) and normative discourse around what sport is and meant to be have normalized very strict and prohibitive PED policies (Jedlicka, 2014). We make no claims regarding the morality of either doping or anti-doping. We further acknowledge that athletes competing against athletes who engage in doping may be harmed in other ways. However, our goal is to take a critical view of how anti-doping constructs the environment in which doping and its related harms occur and to better understand how these effects are mitigated by athletes and other participants in systematic doping (sub)cultures, where PED use is managed and monitored.

This article will use secondary literature in order to review and analyse known cases of systematic doping through the risk and enabling environment frameworks. We begin with a background on doping and anti-doping, risk and enabling environments, and sport risk and

enabling environments. We then present a theoretically explorative discussion on the specific anti-doping risk/doping enabling processes and environments, using known cases of systematic doping as illustration. We conclude with a comparison of sport and non-sport responses to drug use and the potential outcomes of each approach.

Background

Doping and Anti-Doping

Anti-doping is a prohibitive, legalistic system of athlete-centred surveillance, testing, and sanctioning (de Hon, 2016; Mazanov, 2013). Globally, anti-doping efforts are led by the World Anti-Doping Agency (WADA), the umbrella organisation responsible for policymaking and harmonisation (WADA, 2019). Doping is commonly understood as the use of prohibited performance enhancing substances or methods in sport. The official definition accepted by most sport organisations and athletes is that doping is the violation of one of the anti-doping rules laid out in the World Anti-Doping Code. The WADA Code (2019) includes as its fundamental rationale the promotion of athlete health. In this view, health promotion is achieved by prohibiting athletes from using substances for which 'medical or other scientific evidence, pharmacological effect or experience that the Use of the substance or method represents an actual or potential health risk to the Athlete' (WADA, 2019, p.30). Ostensibly, this is related to the perceived health risks of doping substances, though it is also related to broader war on drugs style policies and politics (Coomber, 2014; Dimeo, 2007). Indeed, the WADA Code identifies many illicit 'recreational drugs', such as cocaine, MDMA, heroin, and mephedrone, as substances prohibited in competition; the latter list includes controlled substances (namely cannabis, and opioid-substitution medications like buprenorphine) whose medical applications are increasingly

recognized for purposes unrelated to performance enhancement (Abuhasira, Shbiro & Landschaft, 2018; Thomas et al, 2014).

Beyond health concerns, anti-doping is also supposed to ensure fair competition by preventing any athlete from gaining an unfair advantage. WADA indicates that its primary duty is really to protect non-doping athletes, as its central mission is keeping doping and doping athletes out of sport. This is primarily done through a system of testing biological samples from athletes collected both in and out of competition times and then banning athletes who test positive for doping. There are also indirect methods of detection, such as intelligence-led investigations into alleged doping. WADA takes a zero-tolerance approach under the principle of strict liability, which holds individual athletes responsible for any substance detected in a urine or blood sample regardless of how it got there (WADA, 2019). Decisions regarding doping violations are made by sport governing bodies and appealed through the Court of Arbitration for Sport rather than through civil court systems. While this keeps athletes out of civil justice system, there is an automatic presumption of guilt if an athlete tests positive for a prohibited substance (Lenskyj, 2018). Athletes who unknowingly or accidentally ingest a prohibited substance are held to the same standard as those who intentionally use doping substances and must demonstrate a lack of intent. First time Code violations are punishable by a competition ban lasting up to four years (WADA, 2019).

The prevalence of doping is unclear, though there is a significant gap between prevalence estimated by researchers and the official testing results. WADA consistently returns a positive test rate of 1-2% per year – with exceptions for years in which retesting has occurred – while researchers using more sophisticated survey and modelling methods have estimated much higher rates, varying between 14-57% (de Hon & Kuipers, 2016; Elbe & Pitsch, 2018; Ulrich et al, 2018). It is difficult to determine the effect anti-doping policies have had on doping prevalence, as there were no baseline prevalence studies before WADA's founding. However, the

discrepancy between the positive test rate and even the lowest prevalence estimates indicate that a large number of athletes who report engaging in doping are not being detected, potentially exacerbating PED-driven inequalities between athletes. In this way, anti-doping policies may mirror the limited effectiveness of recreational drug prohibition in deterring consumption or punishing violations, lessons best illustrated in the case of the United States. For example, the 2018 U.S. National Survey on Drug Use and Health estimated that roughly 53.2 million residents aged 12 and over had used illicit drugs in the past 12 months; that same year, the Federal Bureau of Investigation recorded less than 1.2 million arrests for possession of controlled substances, a capture rate just over 2% (likely inflated by the repeated arrest of certain individuals) (United States Department of Health and Human Services, 2018; United States Department of Justice, 2018). Overall, it is increasingly accepted that the introduction of highly punitive prison terms for drug offenses in countries worldwide has done little to reduce drug use, decrease drug purity, or increase drug prices, a failure starkly evidenced by successive and concurrent opioid epidemics in Eastern Europe and the CIS, Southwest Asia, North America, and Australia (Drug Policy Alliance, 2015; Pew Center, 2017; United States Sentencing Commission, 2017). Even within a far more circumscribed arena of enforcement – certain types of substance use within specific sporting competitions – it is unlikely doping-free sport (WADA, 2020) will be achieved through a strategy of random or targeted testing and harsh sanctioning. It is possible that elite individuals or teams might still see the advantages of doping as exceeding the risk of detection even if athlete testing was expanded.

Though there is a range of motivations for engaging in doping (Henning & Dimeo, 2014), a primary one at the elite level is winning. For elite and professional athletes, the monetary incentives to win can be huge and provide a reason for athletes to use prohibited substances (Aubel & Ohl, 2014; Fincoeur, Cunningham & Ohl, 2018). However, the physical and social risks of doping are multiplied when individuals must secure their own supply, determine their

own doses, minimise side effects, and prevent being caught through in or out of competition testing. One way of avoiding some of these issues is for athletes to collectively dope, thereby sharing the burden of risks and working together to minimize them. Systematic doping involves centrally organising doping for a group of athletes. This is often done by an entity above the individual, such as by a team or a state, which often stands to benefit from the cumulative boost in performance among its member athletes. While motivated by both shared and unique interests, systematic doping is similar to the phenomenon of Heroin Assisted Treatment (HAT), or the (tenuously) legal dispensing of pharmaceutical-grade heroin to individuals who have struggled with other modalities of opioid use treatment (Kilmer et al., 2018). In both cases, the supply and use are centrally managed in order to manage the risks of substance use for individuals who would be otherwise incapable of doing this effectively on their own. Though systematic doping is often done for collective performance enhancement, related concerns include avoiding detection and ensuring athletes remain healthy enough to compete. As such, systematic doping may also be a way of managing risks (e.g. safe supply, dosing oversight, side effect management) that would be greater if each athlete were to undertake doping individually. Of course, both HAT and systematic doping as it currently exists are still limited by international/national prohibition policies.

Risk and enabling environments

As suggested by Rhodes (2009) drug harms are shaped by risk environments and a risk environment framework can therefore promote an improved understanding of harm, and harm reduction, as a matter of 'contingent causation' (p. 193). Risk environments can, broadly, be understood as the 'space – whether social or physical – in which a variety of factors interact to increase the chances of drug related harms' (Rhodes, 2002, p.91). Substance use research and policies have historically tended to focus on the individual and individual responsibility for risky behaviours (Rhodes, 2009). This is a trend mirrored in sport doping research that focuses heavily

on motives and prevention at the individual level. Taking an approach that understands substance use as socially (and spatially) situated, we can look more broadly at the interplay of physical, social, cultural, economic, and policy factors across levels (micro to macro) to understand how these influence use behaviours. There has been quite a bit of research attention given to risk environments in which social or recreational drug use occurs (see Duff, 2009; 2010; McLean, 2016; Rhodes et al., 2003). This has pushed forward understandings of how the context in which use occurs in many ways influences use behaviours.

Rhodes (2002, 2009) saw the goal of understanding risk environments as the production of enabling environments in which harm reduction occurs. Enabling environments can be examined similarly to risk environments, as the interaction of various harm reducing factors across levels. As Duff (2010) observed, it is tempting to understand the two separately, or as the former leading to the latter. This, however, limits the extent to which we can understand how both risk and enabling factors and processes are intertwined with one another. Simply adding harm reducing strategies to a risk environment does not automatically make an enabling environment – introducing a service does not necessarily mean it will be, or can be, used. For example, a syringe exchange program that is installed without the explicit cooperation of law enforcement authorities may fail to attract participants if police officers are seen patrolling nearby; similarly, the success of policies that make naloxone (an opioid antagonist used to treat opioid overdose) available for sale without a prescription is contingent upon the drug's retail price point, the economic status of potential buyers, and the structure of health care and health insurance within the larger society. In sum, the processes of building enabling environments require simultaneously understanding the multi-layered risk environments that may limit their impact and effectiveness – or be shaped positively in turn. The evolution of drug policy in Vancouver, Canada may serve as an illustration of the latter movement, as the formal introduction of a supervised injection site in 2006 was followed by a shift toward 'harm reduction policing' (characterised by fewer drug violation

arrests) and more recently, political interest in drug possession decriminalisation (Landsberg et al., 2016).

Understanding risk and enabling environments together and as co-constituting also allows us to see the ways that enabling processes occur within risk environments even where higher-level changes (e.g. policy or economic) are unlikely or unable to happen. Few, if any, commentators anticipate the legalisation of heroin for recreational use in any nation; yet at least seven countries currently allow heroin-assisted treatment (HAT). These initiatives are founded upon the realisation that abstinence-based treatment, or other forms of opioid substitution therapy, may fail to attract and retain a significant subset of people who use opioids (Fischer et al., 2002; Fischer et al., 2007). They additionally recognise that within the context of heroin prohibition on a national-level, a 'safe supply' of the drug cannot be guaranteed to those who buy from the illicit market – a particular concern in areas experiencing a surge in fentanyl-adulterated heroin and associated overdoses. Arguably, such harm reduction strategies (including HAT, syringe exchange, or take-home naloxone) represent adaptations that accept drug prohibition as an enduring, if not eternal, feature of the risk environment for people who use drugs (Roe, 2005). It might additionally be noted that the roll-out of these once controversial services has often followed the recognition of a public health crisis, such as HIV/AIDS or accidental overdose, with potential to affect the 'general' non-using population – a historical precondition that does not necessarily apply to drug use in sport (McLean, 2011). The politics and economics around doping are similarly unlikely to change and many of the public health concerns of recreational drug use also apply to PED use, such as unclear quality, labelling (dose and ingredients), and contaminated supplies (see Brennan, Wells & Van Hout, 2017; Fincoeur, Van de Ven & Mulrooney, 2015).

Doping Risk and Enabling Environments

The sport risk environment is that in which various risk factors interact across micro and macro levels to increase the potential for harm to athletes engaging in doping (Hanley Santos &

Coomber, 2017; Rhodes, 2002). By shifting the focus from the individual athlete to the sporting context, we can see how harms to doping athletes are socially produced (c.f. Rhodes, 2002). Enabling environments are not well understood with regard to sport, as these are meant to be those physical or social spaces where barriers to harm reduction practices are removed (Moore & Dietze, 2005) while anti-doping policies and discourses have led to a culture that largely does not consider harm reduction a viable option for sport. Such an approach seems more or less impossible to combine with the cultural beliefs and discourse around values of fair-play and sportsmanship in the elite sport context. This is contra the broader trends in approach to substance use. While harm reduction strategies and interventions for recreational drug use have flourished, sport has remained stubbornly bullish on a detect and punish approach (Henning & Dimeo, 2018), not only in elite sport but also in recreational and non-competitive sport contexts. Amateurs and recreational athletes are included anti-doping's remit and they may be punished in the same way as elites for anti-doping rule violations, regardless of their athletic ambitions. This reflects an individual/athlete-centred view of doping that places the policy focus and responsibility squarely on the athlete (Dimeo & Møller, 2018). Ignoring factors such as the level of competition or age of the athlete in question, further reinforces the potentially harm- and stigma-producing, punitive approach even in cases where the fair-play ideal is not really at stake. One example of this is Carl Grove, a 90 year old US cyclist who was given a public warning and stripped of an age group world record and national title – he was the only competitor in his age group – when he tested positive for a steroid, likely resulting from a contaminated piece of meat he consumed the day before he was tested (USADA, 2018). While some types of recreational drug abuse are increasingly viewed as symptomatic of the 'brain disease of addiction,' which people who use drugs are unable to control, doping is largely seen as a rational and self-serving, if dangerous, practice, deserving of moral opprobrium – even within non-elite sporting contexts that lack significant material or symbolic rewards for performance. Of course, both of these discursive

frameworks around drug use – as disease or deviance – locate pathology in the individual, not the environment.

Despite the growing research on a range of recreational drug risk and enabling environments, very little research has been done to similarly understand the environments in which doping occurs. One qualitative study with cyclists that has engaged with the risk environment framework looked specifically at the issues of employment and labour precariousness as factors that may lead to doping (Aubel & Ohl, 2014). This study found that the structure of employment and working conditions could be addressed in ways to reduce risk as a preventative measure against doping. A second doping study surveyed Danish elite athletes about their views on PEDs and methods (Overbye, 2018). Rather than focusing on the contours of a sport risk environment, this quantitative study took the risk environment as a jumping off point to argue that prohibited substances should be divided into those that produce social harms and those that produce individual harms (Overbye, 2018). Although both studies have merits, neither gives a full picture of what a sport risk environment looks like across micro and macro levels, nor do they engage with enabling factors or delineate ways enabling environments may be produced within sport.

One in-depth analysis of a doping risk environment was by Hanley Santos and Coomber (2017), in which the authors examined how anabolic steroid use was socially situated. The authors interviewed individuals who use steroids who accessed a safer injection facility and analysed how broader social, cultural, and political contexts were related to and impacted on their individual behaviours. They argued in favour of expanding harm reduction services and taking account of the range of contextual factors that impact use practices (Hanley Santos & Coomber, 2017). For its consideration of harm reduction and service interventions, this does not directly examine the sport enabling environment. As such, we so far have little understanding of enabling factors in sport, how enabling environments are created and maintained, or how these environments are co-constituted with risk environments.

Harm Reduction and Doping

Researchers on doping policy have previously suggested harm reduction as an alternative approach to punitive anti-doping (e.g. Henning & Dimeo, 2018; Kayser & Broers, 2012; Kayser, Mauron & Miah, 2007; Kayser & Smith, 2008; Kirkwood, 2009; Lippi, Banfi, Fanchini & Guidi, 2008; Lippi, Franchini & Guidi, 2008; Smith & Stewart, 2008, 2015). Though anti-doping is predicated on promoting athlete health, the current approach has been criticized as being paternalistic (Kayser & Smith, 2008) or ignoring social and sport realities of substance use (Smith & Stewart, 2015). Proposed models of doping harm reduction have focused on centering athlete health, though have differed in their overall approach. One liberalized approach by Savulescu, Foddy, and Clayton (2003) advocated health checks for athletes. Athletes would be allowed to use low risk substances and monitored for negative effects from higher risk substances, but only prevented from competing if they were deemed not healthy enough to compete. Similarly, others have suggested a public health-informed system of medically supervised doping to regulate use (Kayser, Mauron & Miah, 2007). Public health approaches to PED use, including needle and syringe exchange programs and other harm reducing measures, have had wide uptake among people who use steroids in the UK (McVeigh & Begley, 2017). These models each offer benefits to athlete health, though they leave open many issues of implementation within the wider sport environment that has been saturated with anti-doping narratives of drug-free sport and zero tolerance for doping.

One model has called for a partial change to anti-doping by relaxing current rules to allow for harm reduction to be introduced. Kayser and Tolleneer (2017) proposed a step-change approach towards an anti-doping system that would reduce the number of banned substances to only those that present a high risk to health and include health monitoring, but that would retain a testing system to ensure athletes used PEDs only at defined levels. This model goes beyond the others to include several levels of ethical concern (self, other, play, display, humanity) and acknowledges

the complex reality of implementing changes to the existing system. Another model that takes further account of context is that developed by Smith and Stewart (2008; 2014) that considers a range of issues related to doping (e.g. technological, health, policy) and contextualizes sport's zero tolerance approach within a broader social context that accepts medical intervention and enhancement. These latter models offer specific recommendations for how sports policy may adapt to allow for harm reduction. Taking these into account, we next apply the risk environment framework to the current context to analyse how anti-doping policies have created an intolerant environment that drives doping into the shadows of sport, increasing various risks to athletes along the way. Following this, we examine how groups have organized systems of doping using strategies, similar to those outlined above, that work to reduce harm to athletes and enable safer use of PEDs.

Discussion

Anti-Doping Risk Processes and Environments

Applying the heuristic developed by Rhodes (2002, 2009) to outline the factors and levels of environmental risk to the sport context illustrates several ways that sport and anti-doping policy create a risk environment that may produce doping behaviours (see Table 1). Anti-doping policies are underpinned by a sport culture in which doping is positioned as an issue of both morality and health. Much like other prohibitive substance use policies, these policies also create their own set of risks for athletes. Indeed, many studies have identified the criminalisation of drug possession for recreational use as among the most damaging features of those risk environments, not least because such policies often preclude or limit the formation of enabling environments. As a part of a broader 'war on drugs' climate (Coomber, 2014; Henning & Dimeo, 2018), anti-doping policies tend to increase risk across categories for doping athletes.

Table 1: Sport doping risk environment

	Micro-environment	**Macro-environment**
Physical	Sites of use	Trade and trafficking routes
	Secret spaces (hotel rooms, domestic spaces)	Inaccessible training camps, locations
	Training centers	International/global competition sites
Social	Team/club/group norms	Social and cultural norms and values
	Athlete Support Personnel pressure	Stigmatisation/Marginalisation
	Family pressure	Performance pressure from sponsors, media, fans
Economic	Income	Business of sport: opportunities
	Costs of use	Public investment in performance
	Employment/sponsor contracts	Performance-contingent funding
Policy	Individual testing system	WADA/National Anti-Doping Organisation policies
	Individual sanctions	UN Convention against doping
	Athlete Support Personnel sanctions	International Federations (i.e. no needle policies)
	Team policies (i.e. loss of contract if found doping)	National-level policies (i.e. Criminalisation)

Table 1 outlines four risk factors (physical, social, economic, policy) at both micro and macro levels. We have populated the table with examples of factors at both levels that produce risk. The first factor identified by Rhodes are the physical risks of doping. Due to the high levels of intolerance for any kind of doping or doping-related behaviours, anti-doping policies and culture drive use underground (see Smith & Stewart, 2008; 2014). This increases the physical risks for athletes, as supply chains for high quality PEDs can be difficult to secure and maintain (Fincoeur, Van de Ven & Mulrooney, 2015). Further, due to their illicit nature, athletes may struggle to get quality advice on how to properly dose substances and turn to peer networks or online forums for information. One qualitative and netnographic study of an online doping forum looked at how people who use PEDs learn about and access these substances through social media and various internet forums for example. The study shows how the individuals in doing so became part of an ethnopharmacological do-it-yourself culture in which they could discuss their experiences of using the drugs and minimise the possibility of encounters with police while involved in criminalised activities (Andreasson & Johansson, 2016). The authors also conclude that although users of the forum are aware of the possible risks and health costs associated with substance use to a certain degree, the potential physical gains through use and how to find information on it clearly dominated the discussions (see Smith and Stewart, 2012). This extends to the areas where PED use actually occurs – proper hygiene especially for injections or transfusions may be difficult to maintain if materials are difficult to acquire. There is also an inherent hazard resulting from information posted online from often anonymous individuals whose experiences and expertise are unknown or difficult to verify.

Social, economic, and policy risks – the three additional factors outlined by Rhodes – are bound together in significant ways. As shown in Table 1, detection underpins many of these risks, which increase as anti-doping policies become stricter and testing more frequent. The main risk for athletes here is testing positive and receiving a sanction. This may result in further social and

economic consequences, including being stigmatised as a doper or losing one's position on a team or sponsorship deal. At the same time, as athletes are pressured to perform from family, teams, and sponsors, there may be increased pressure to use PEDs to gain an edge over non-doping competitors. In sport groups or organisations where doping is accepted and employment is tenuous or performance based, PEDs may become a normal working condition (Aubel & Ohl, 2014). This directly relates to economic risks, as income or sponsorships tied to performance present a fertile atmosphere for pushing doping boundaries. Similarly, athletes who receive support from public entities may feel the need to provide a return on that investment through medals or other victories, leading to a willingness to take more risks. Taken together, anti-doping policies and culture set up an anomic environment in which athletes are incentivized to dope while also being at risk of a range of negative outcomes if they are caught. It then becomes imperative that athletes avoid detection, a situation that can be tricky for an individual athlete to manage on their own.

Doping Enabling Processes and Environments

There is a push/pull dynamic between risk and enabling factors. As sport and anti-doping drive harsher policies, more invasive surveillance techniques, and push the cultural narrative around 'clean sport', doping groups have responded with techniques for avoiding detection and keeping overall risk as low as possible. In order to understand how enabling environments are produced we must consider those instances where the environment has been altered in order to reduce the social, political, economic, and physical risks of doping. As noted above, online doping forums may be seen as a form of user-led, 'grassroots' harm reduction communities, although such venues may focus on the maximisation of physical or performance benefits. Nevertheless, these communities do provide a platform for diffusing extensive knowledge and information on dosages, post-cycle therapies, and how to avoid and treat unwanted side-effects from doping substances, all of which are part of a harm reducing ethnopharmacological culture (Andreasson &

Johansson, 2020; Monaghan, 2012). Moreover, the very nature of the doping risk environments may limit the ability of individuals to effect harm reduction through mere behavioural change. People who use drugs seeking advice from recreational drug forums such as Bluelight or Erowid encounter similar barriers to safer consumption – a digital network of geographically-disconnected and anonymous individuals can do little to ensure safe supplies, while their expertise may be restricted to personal experience.

As harm reduction is not recognized as an anti-doping policy approach, we have no formal interventions to consider or evaluate. This remains a paradox in sport: one of the rationales for anti-doping is athlete health but the approach largely excludes harm reduction. Though individual-oriented harm reduction services related to doping are largely absent from the sporting context, we do have examples of an environmental approach: systematic doping. In such systems care is taken to reduce as much risk as possible for those athletes who are using doping substances or methods. There is no guarantee that athletes will not still suffer some health harm related to use of PEDs as any use carries risks, a reality underscored by the implementation of medical monitoring of World and Professional Continental Teams by cycling's governing body the Union Cycliste Internationale (UCI, 2019). This was developed partially to ensure cyclists were fit enough compete if using undetected doping methods. The cycling program is a rare example of a sport acknowledging that doping is potentially widespread and that athlete health may be at risk. However, most sports have not taken such a proactive approach. Instead, organized doping systems ensure athlete health in other ways.

Table 2 illustrates some ways organized doping groups may seek to change environmental factors to enable doping. For the first factor, athletes' physical safety is looked after by doctors or other lay experts to ensure optimum use for getting desired enhancing effects without negatively impacting health or performance. Their social risks are managed by providing social support among the doping group who all share the same (secretive) use. Policy risks are reduced by

anticipating anti-doping testing in order to circumvent a positive test. Similarly, economic risks, including loss of one's livelihood, are managed by avoiding positive tests and ensuring no disqualification, loss of prize money, or loss of sponsorships. Similar systems have also been reported in competitive bodybuilding where coaches support competitors doping practices through advising on what to take, how to acquire substances, proper dosing, and managing risks (Andreasson & Johansson, 2020; Monaghan, 2001). By analysing known cases of systematic doping we can see how they employed strategies similar to those outlined in Table 2.

Table 2: Sport doping enabling environment via systematic doping

	Micro-environment	**Macro-environment**
Physical	Labs/medical sites	Secure/safer supply
	Hygienic equipment	Inaccessible training camps, locations
	Medical supervision, advice	Centrally organized distribution
Social	Normalization of use within group, team	Social and cultural norms and values
	Omerta	Stigmatisation/Marginalisation
	Peer to peer knowledge	Internet information
Economic	Guaranteed sponsor/team/club contracts	Complicity of sponsors
	Health care costs covered	Event organizers' passivity on testing
Policy	Team policies not enforced	Threshold testing methods
	Avoiding easy out of competition testing	(Mis)Use of therapeutic use exemptions
		In and out of competition substances

During the 1990s, a number of doping sub-cultures emerged that illustrate the development of enabling environments for doping. The archetypal example is that of professional cycling. The organisation of doping in cycling was different from earlier doping systems such as that in East Germany, which was state-sponsored and led by doctors (Hunt, 2011). Though not state sponsored, cyclists too obtained support from highly qualified doctors to support their doping practices, which advanced to include blood doping and micro-dosing; in response to a tightening policy environment (notably the creation of WADA in 1999), doping in cycling became highly organised and sophisticated, leading to not only fewer health risks, but technological innovations that supported the evasion of anti-doping sanctions for prolonged periods. The American cycling teams Discovery and US Postal are perhaps the most famous examples of systematic doping in cycling, and ones that additionally demonstrate its efficacy in reducing policy risks for athletes through the enforcement of omerta. Winning the Tour de France seven times with US Postal between 1999-2005, Lance Armstrong was highly protective of omerta – the code of silence around doping that all participants were expected to respect as mutual protection against suspicion – and in some cases pressured and bullied other cyclists and journalists who were raising concerns about doping (Bell, Ten Have & Lauchs, 2016). Through working closely with highly specialised doctors, the risks of getting caught were carefully managed: Armstrong 'passed' hundreds of doping controls over a decade. The success of Armstrong's team, and systematic doping scheme, was undoubtedly maintained through the coercive strategies that threatened to harm potential whistle blowers (and in the case of other cyclists, expose them to the risks they had previously avoided through systematic doping); yet, such tactics were arguably shaped by a policy environment whose severity had increased drastically compared to pre-WADA periods. Ultimately, however, this enabling environment was foreclosed in the early

2010's, as evidence of systematic doping on Armstrong's teams came to light, leading to his lifetime ban from all sport (USADA, 2012).

One important doping scandal since WADA's founding was revealed in 2015 when whistle-blowers provided evidence to news outlets that Russia had been engaged in a state-sponsored doping system that implicated the Russian Anti-Doping Agency (McLaren, 2016a). The system was directed by the head of Russia's anti-doping laboratory, Grigory Rodchenkov, who sourced and controlled the supply of substances and provided oversight of hundreds of Russian athletes' dosing and use via the country's Sports Ministry. The effectiveness of the system was clear after Russia dominated the medals table at the 2010 Winter Olympics and then performed better than expected at the 2012 Summer Olympics, all while protecting most athletes from testing positive (McLaren, 2016a). Athletes in this system were well looked after; the quality of their doping substances and protection from reputational and economic ruin was improved as long as they remained within the system—a type of omerta. Rodchenkov described perfecting his protocol to maximise benefit, limit risk, and avoid detection, as well as his frustration at athletes who would use additional substances that put them at risk of testing positive (Ruiz & Schwirtz, 2016). The reports on Russia also included evidence that athletes had been extorted by various members of the Russian sport apparatus in exchange for keeping their doping and/or positive anti-doping tests from becoming public (McLaren, 2016b).

The main harms to athletes came in response to the scandal. The International Association for Athletics Federations banned all Russian athletes from international competitions in 2016, including the Olympics. In 2018, the International Olympic Committee banned Team Russia from the Winter Olympics, allowing Russian athletes to compete independently under the neutral Olympic flag. Even athletes who were not part of the doping system suffered reputational and economic damages. Many of those who were implicated received competition bans up to four years.

The enabling processes and environments represented by systematic doping demonstrate a dynamic interplay with the multi-layered risk environment structured by anti-doping policies and cultural stigma. For example, where threshold values for banned substances have been set, athletes have ensured that they remain under the limit to avoid detection. Similarly, the introduction of the athlete biological passport meant that samples would be recorded over time to flag changes in biological values that might indicate doping not caught through testing single samples. Doping groups responded by introducing micro-dosing of PEDs that would show only minor variations in biological values while still giving athletes performance benefits. The social, economic, and policy risks to athletes in both cases are minimised through the harm reducing processes that ensure use remains undetected.

The restricted access to many doping substances due to both sport and non-sport legal prohibitions in many places means doping athletes may also find it difficult to secure a safe supply of PEDs. Because of these restrictions, athletes are vulnerable to both detection and physical harms from poor quality substances. Doping groups may respond to this by enlisting ‘doping doctors’ who can procure or prescribe higher quality substances, or by securing other trusted suppliers. This echoes sport harm reduction policy proposals for medically supervised doping (Savulescu, Foddy & Clayton, 2003; Kayser, Mauron & Miah, 2007).

Due to the risks stemming from detection outlined above, there is a necessarily secretive element to systematic doping. Professional cycling provided a clear example of this, as the notion of omerta worked to protect cyclists from being found out. This silence required athletes to avoid discussing their own use and to deny knowledge of doping activities by anyone associated with their team. While omerta has been vilified within cycling and sport more generally, this cultural artefact actually explains some of the ways in which systematic doping can act as a form of harm reduction and produce (quasi)enabling environments. Many harm reducing programmes and interventions rely on trust between the service providers and the substance using clients. Clients

must be confident they will not be turned over to authorities, that other clients will not report them, and that offered services will lessen their chances of harm. Similarly, athletes must trust that the doping managers and their teammates will similarly remain silent about doping in order to reduce physical risks related to supply and administration, as well as social, economic, and policy risks related to the consequences of detection. Russia exemplified such a system on a grand scale, protecting athletes across local, national, and international levels. Because all members of the team are in it together (Johnson, 2016) one slip could cause the entire system to crumble such as when Floyd Landis became a whistle-blower and exposed the extent of the US Postal/Lance Armstrong doping system or Grigory Rodchenkov revealed the extent of Russian doping. In this way, omerta functions as a harm reducing strategy and enables safer doping to occur. Omerta also has implications for other stakeholders. Event organizers and sponsors may be led to believe teams are not doping and promote them as such, and though this may offer some plausible deniability it can also leave them open to criticism if the system is later revealed. Further, fans and supporters may feel betrayed if doping is revealed among the athletes or teams they support or have defended from allegations of doping.

Athletes did still suffer harms within these systems, often at the hands of central organising individuals or groups in the forms of bullying, coercion, and extortion. One reason athletes were vulnerable to such abuse is due to the nature of the risk environment in which these systems operated. Because of the risks that accompany doping revelations and the secretive nature of such systems, athletes had little recourse that did not necessarily out them as dopers or threaten their livelihoods, safety, or reputations. Much like individuals who are victimized as part of their use or sale of other controlled substances, doping athletes lack ‘access to law,’ an absence posited to fuel the apparently violent ‘nature’ of illicit drug markets at large (Jacques et al., 2016). Even as the systematic approach to doping did enable use and reduce multiple types of harms, it was unable to reduce all risks. These persistent social harms were able to flourish due to the

competing risk derived from the anti-doping environment. Without the threat of exposure and accompanying harms, athletes may have been able to avoid some of these abuses. The policy response to this reality has been a shoring up of whistle-blower protections for athletes, though how effective those are remains to be tested.

Conclusion

By applying the risk environment framework to the sport context we have demonstrated many doping risks are socially produced through punitive anti-doping policies and approaches. Systematic doping is a response to these aimed at addressing the main risk factor produced by anti-doping: a positive doping test. By centralising doping and organising details to shield athletes from physical, social, economic, and policy risks, systematic doping necessarily includes harm reducing strategies. Cycling in the 2000s and the recent Russia scandal have shown how effective these well-organised and secretive systems can be. Despite anti-doping rules and increased testing and controls, in both cases the use environment shifted from one of great risk to one where use was enabled and supported. In many ways, these efforts mimic harm reductive approaches employed in the non-sport substance use context, as well as the harm reduction models proposed for sport (e.g. Kayser, Mauron & Miah, 2007; Smith & Stewart, 2015), that tend to be based more on ideas around public health. Though some social harms (i.e. bullying, bribery) persisted even in the face of these efforts to reduce harm, many link back to the prohibitive and stigmatising factors arising from anti-doping itself. Armstrong would have been less able to bully members of his group and Russian officials less likely to coerce and extort athletes if those athletes did not fear the consequences of retaliation and revelations of their own doping.

Where systematic doping undertaken by national sports or private athlete teams has been roundly condemned (and harshly punished), there are widely accepted analogues within the recreational drug sphere, with both governments and non-profit organisations seeking to shape enabling environments for people who use diverse drugs. HAT is perhaps the starkest example of

governments' willingness to furnish individuals with the safe supply of a highly stigmatized drug, in order to ameliorate the multiple and varied risks associated with its unregulated use. Beyond enabling (a delimited population's) heroin use at the level of policy, HAT also molds the physical, social, and economic environments of use in ways that that reduce acute and chronic harms. Delivered in hygienic and private spaces overseen by medical personnel, HAT removes the threat of arrest and stigmatisation that accompanies public use and precludes equipment sharing that may lead to disease transmission. In the countries that offer HAT, participants receive no-cost heroin of known purity, in doses and at intervals calibrated to their individual tolerance – effectively eliminating the hazards of on-site overdose, diluted or fake drugs, and possibly, other high-risk behaviours driven by withdrawal (such as acquisitive criminal activity) (Kilmer et al., 2018).

While governments remain committed to drug policy approaches that emphasise prohibition, HAT stands out as a concession shaped by evidence, pragmatism, and humanism. Decades of draconian punishments have failed to eliminate, or even consistently lower levels of recreational drug use within the general population; there were more than a half million deaths related to illicit drug use in 2017 alone (United Nations Office on Drugs and Crime, 2019). Much like the complex individual and structural strains that shape problematic drug use outside of sport contexts, the disproportionate material and symbolic rewards that drive some athletes' interest in doping are likely to persist, and in turn inspire systematic doping schemes. Policy changes that seek to reduce harm among some athlete groups, such as recreational, youth, or elder sport participants, could provide a similar concession within the sport context. Harm reduction proposals for addressing doping have attempted to do so by advancing suggestions such as medically supervised doping, health checks, and threshold testing (Kayser, Mauron & Miah, 2007; Kayser & Tollneer, 2017; Smith & Stewart, 2015). Utilising such strategies in a policy

context may begin to help foster sport enabling environments that are so far available only through illicit doping systems.

While far from aligning with hegemonic ideals of sport and anti-doping, systematic doping has provided a way of protecting athletes from the risks and harms produced by anti-doping within the sports environment. These efforts exist in tension with anti-doping, forming a responsive relationship between the two groups. As anti-doping policies and testing measures were put in place and enforcement increased, athletes, clubs, teams, and even countries responded by instituting systems underpinned by secrecy that would enable doping use to continue while simultaneously reducing the risk of harms to all involved. Anti-doping has responded with increased levels of athlete surveillance, increased penalties, and developing new methods of detecting doping.

It is unclear what will be the final outcome of doping war, but new questions and issues constantly present new challenges for both groups. For example, how each side will respond and adjust when unexpected outside forces – such as the current Covid-19 pandemic that has led to the postponement of World and Olympic level events – upset the tug of war. Future research on anti-doping policy and harm reduction may look more closely at the ways known doping systems have developed and their strategies for reducing various risk factors in order to enable doping. By considering these systems, sport researchers and policymakers may find new ways to incorporate harm reducing strategies to produce a less risky sport environment. It is possible, though, that the most effective doping systems for reducing harms may be the ones that have thus far avoided detection.

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