Entering Cheat Codes or to Play True: Where is Anti-Doping Going Within Esports?

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Abstract

Esports have become a staple within the sporting and entertainment industries however, in parallel with the success of these games there is much confusion to where anti-doping resides in this virtual arena. With the International Olympic Committee's (IOC) statement in October 2023 to create an Esports Games, policymakers and governing bodies must pursue anti-doping programs to be proactive against doping, cheating, or corruption. Nevertheless, some issues currently inhibit fair competition and intelligence gathering. These include no unified database of recorded bans or sanctions delivered to players or coaches for digital-doping rule violations (DDRVs) at esport events. In conjunction, there is no governing body to unify all the esport games and the multiple esport federations have different levels of interest and resources dedicated to anti-doping and or cheating. Finally, there is no current mention of esports from the World Anti-Doping Agency in their 2020 – 2024 strategy. Overall, the current literature highlights a lack of anti-doping education to teams and athletes, few policies in place to dissuade would-be dopers, and an omission of evidence that drug testing occurs at a similar standard to traditional sports in current esports events. WADA and anti-doping organisations (ADO's) must proactively support esports events since most gaming competitions at the elite level have lucrative sponsorship and cash prizes, which raises the risk of corruption. The review offers insights and recommendations into the current literature involving esports and anti-doping policies.

Keywords: Anti-Doping, PEDs, Esports, Cheating, Laws

Highlights

- Currently, there is no governing body to unite all esport federations to combat digital doping rule violations (DDRV's).
- The current ESIC database on cheaters is a good start to recording infractions. However, more information is required to build detailed profiles on these cheaters, hackers and dopers.
- Recommendations have been made to help esport teams and organisations to clean up their sport within the context of anti-doping and digital doping.
- Finally, the anti-doping landscape is mixed across the different esport federations with areas of significant investment to anti-doping and others with little credence paid to the topic.

Introduction: The Esport Olympic Games

The Olympic Games have long been established as the pinnacle of sporting excellence [1] for athletes worldwide to participate in various events. The modern games have seen a range of events since its inception in 1896 in Athens [1], including combat sports such as boxing and or wrestling, multidiscipline events featuring the decathlon, and team-based sports such as Rugby Sevens and Baseball [2]. The International Olympic Committee (IOC) currently has two separate games, the Summer and the Winter Olympics [3-4]. The summer games are called "The Olympic Games" as they are the original Olympic games and have the most participating events. They run their games every leap year, and the Winter Olympics are held two years after the leap year. The city of Paris in France will host the 2024 Olympic Games [5], and the co-hosts of the next Winter Olympics will be Milan and Cortina d'Ampezzo in Italy [6].

Never before in Olympic history has there been an esports game or computer game event on the official program. In the most recent Olympic cycles leading up to games, there have been esports programs and/or events to replace the loss of in-person sporting events due to the pandemic and support running another international sporting event such as the Commonwealth Games [7-8]. These esport events have been promoted with these week- or month-long sporting festivals but not as an official event where athletes participate for their country. The Birmingham 2022 Commonwealth Games saw the first large-scale esports events to be organised alongside the Commonwealth sporting calendar. These saw Esports England, Esports Wales, Esports Scotland, and Esports Northern Ireland compete in the Commonwealth Esports Championships in games such as DOTA, Rocket League and E-Football between the 6th and 7th of August in Birmingham [9]. After the massive success of the Birmingham (England) 2022 Commonwealth Games, the then hosts for the 2026 Games (Australia) had publicly announced they would not have esports at their games due to the lack of testing and anti-doping support in their events [10].

This perception is not unfounded as many games and platforms within esports have documented cases of cheating, doping and hacking. The use of performance enhancing drugs (PEDs) has been recorded when athletes have admitted or being caught using Adderall and other similar stimulant drugs [11-15]. Match-fixing has occurred across many games including Counter Strike [16] and StarCraft II [17]) and just this year a whole regional league in Vietnam is under investigation for widespread match-fixing [18]. In e-cycling, there has been varying methods to cheat [19] and a growing belief that there is a culture of cheating, hacking and or doping in the sport [20]. There was one instance of an athlete who was caught using an anabolic steroid outside of e-cycling in an in-person cycling event [21]. He was then banned from both virtual and in-person cycling events as a result of their doping. Overall, across multiple games and platforms, the esport community has a belief there is a sub-culture of cheating and doping using PEDs within the virtual space [22].

Nevertheless, these instances have not slowed down the rise of esports and has attracted the attention of the IOC to feature esport events in the run up to the Paris 2024 Games. The most recent event was the Singapore Games in June 2023 [8 & 23]. This promoted a mixture of movement-based video games (MBVGs) and sedentary-based video games (SBVG) [24] and displayed esports that represented traditional and Olympic sports. Only some of the games mentioned below were part of the IOC Esports Week, as some only featured as exhibitions to demonstrate additional esports platforms.

IJESPORTS

These included archery (Tic Tac Bow: Archery PVP), baseball (WBSC eBaseball: Power Pros), chess (Chess.com), Indoor Cycling known as e-cycling (Zwift), dance (Just Dance), motorsport (Gran Turismo), Indoor Rowing known as e-rowing (EXR and Rowcave), sailing inshore and sailing offshore (Virtual Regetta), Taekwondo (Virtual Taekwondo), Tennis (Tennis Clash: Multiplayer Game), Rocket League, Basketball (NBA 2k23), Street Fighter 6, Table Tennis (Virtual Table Tennis), Duathlon (Arena Games Triathlon) and shooting (Fortnite) [8,25-26]. Building upon this, the IOC announced on October 13th, 2023, that it would create an IOC Esport Games to sit alongside both the Summer and Winter Games [27]. This will be the first-ever Esports Games and dedicated event where Olympic medals will be awarded to those competing in a virtual or gaming setting. However, esports games must first meet the criteria to be considered an Olympic sport. One of these themes is under clean sport, which covers implementing drug testing at events, promoting anti-doping education, athlete testing all year round and being proactive to eliminate cheating and doping from their sports. All sports follow the World Anti-Doping Agency (WADA) rules and regulations and sign up to their charter to uphold the values of clean sports.

Background to the World Anti-Doping Agency (WADA)

WADA was established in 1999 as an international independent organisation to lead on all matters involving preventing doping in sport [28]. Through the methods of promoting anti-doping education, research, helping governments clamp down on drug use and helping them define laws and deterrents, their vision is "a world where all athletes can participate in a doping-free sporting environment" [28]. They go on to explain that.

> "Sport is not a game you simply win or lose. Its ethos goes beyond winning. Win by cheating, and everybody loses. At WADA, we are dedicated to fair competition. We are proud to be the world's unifying force for doping-free sport. We exist…to guide…to enable…to inspire athletes and sport to make the right choices. Because we are all at our best when we play fair and square. Together, let's raise the game and Play True" [28].

The latest edition of their role, vision and strategy is laid out in the WADA Code 2021. The first edition took effect in 2004 and has been updated four times since – 2009, 2015, 2018 and 2019 [29]. The Code is the basis of the WADA anti-doping program and helps to advance the sport through pursuing clean sports and anti-doping efforts. It is also made considering the principles of proportionality and human rights [30]. The WADA anti-doping program has three main elements, i) The Code, ii) International Standards and Technical Documents and iii) Models of Best Practices and Guidelines [30]. Not all of these will be explored in the paper as it is unnecessary for its aim.

The WADA anti-doping programs are based upon the good values of sport. These intrinsic values are referred to throughout the Code as the "spirit of sport" [31]. These programs protect athletes' health and provide a platform for the same athletes to reach new levels of success in fair competition. To end, WADA states, "The spirit of sport is expressed in how we play true. Doping is fundamentally contrary to the spirit of sport" [31]. Their Code and website define doping as "the occurrence of one or more of the anti-doping rule violations set forth in Article 2.1 through Article 2.11 of the Code" [32]. Table 1 summarizes the multiple anti-doping rule violations (ADRVs), which can be classed as doping and/or cheating.

Table 1 – Doping and/or Cheating Rule Violations [32]

A) Presence of a prohibited substance in athlete's sample
B) Use or attempted use of a prohibited substance or prohibited method
C) Evading or refusing or failing to submit a sample
D) Whereabouts failures
E) Tampering or attempted tampering with any part of the doping control
F) Possession of a prohibited substance
G) Trafficking or attempted trafficking of a prohibited substance
H) Administration or attempted administration of a prohibited substance in or out of competition
I) Complicity or attempted complicity
J) Prohibited association with another athlete or coach
K) Acts to discourage the reporting to the authorities (e.g., intimidating other athletes/coaches)

With the terminology of both what doping is and what any of the ADRVs' are it is now essential to understand what makes a performance enhancing drug (PED) and qualifies for the prohibited list.

The prohibited list is updated and published annually to consider any new drugs identified and/or the methods of using said drugs. Again, from the WADA Code [33] in section 4.2, they define prohibited substances and prohibited methods, "which are prohibited as doping at all times (both In-Competition and Out-of-Competition) because of their potential to enhance performance in future Competitions or their masking potential, and those substances and methods which are prohibited In-Competition only. The Prohibited List may be expanded by WADA for a particular sport. Prohibited Substances and Prohibited Methods may be included in the Prohibited List by general category (e.g., anabolic agents) or by specific reference to a particular Substance or Method".

In-competition is during the event itself and out-of-competition is outside of the sporting event. Some of these substances on the prohibited list are banned in competition but are allowed outside of the competition. These are referred to prohibited in-competition-only. In section 4.3.1, through sub-sections 4.3.1.1 – 4.3.1.3 [34] provide the criteria for what is considered a PED and makes it to the prohibited list (pages 32 – 34 of the WADA code). These are laid out below in Table 2.

Table 2 – Criteria for the Prohibited List [33-34]

A) Medical or other scientific evidence, pharmacological effect or experience that the substance or method, alone or in combination with other substances or methods, has the potential to enhance or enhances sport performance.
B) 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.
C) WADA's determination that the Use of the substance or method violates the spirit of sport described in the introduction to the Code.

ESPORTS

Subsequently, many factors and influences allow doping to occur which is highlighted in the work by Backhouse, Griffiths and McKenna [35] who looked at the environment that influences cheating and doping and referred to it as "dopogenic". They defined it as "the sum of influences produced by the surroundings, opportunities and conditions that promote ADRVs. Local level factors (e.g., team, sports clubs, home, neighbourhood, school) work alongside structural factors (e.g., education systems, national and international sports organisations, health systems, government policies and societal attitudes and beliefs) to create the 'dopogenic' milieu" from defining WADA's role, what makes up an ADRV, their criteria for the prohibited list and outlining the dopogenic environment.

After establishing what WADA is, its role, and how it defines doping, the work will investigate the current provision for anti-doping to esports through the international federations and governing bodies. This will be done by reviewing what federations and organisations upload the values of WADA and fair play for clean sporting competition. The work will not be going into the different methods to cheat within esports as that has been covered across multiple esport games [20 & 36]. Finally, it will not be going over the issues of energy drinks [37-38], performance enhancing drugs (PEDs) [14 & 22] and the use of Therapeutic Use Exemption (TUE) forms surrounding Adderall and other cognitive enhancements [39-40].

Provision of Anti-Doping Policies and Organisations within Esports

Sports that have signed up to WADA, such as soccer, rugby, and athletics, are all organisation members, defined as one of the Code signatories [41]. WADA has over 140 Code Signatories from international federations and major event organisations [41]. These bodies do not have to be an Olympic or Paralympic sport, as they can also cover national anti-doping organisations and other organisations with significant relevance in sport. WADA in of Article 23.1.2 of the Code states the following, "The International Olympic Committee; International Federations recognised by the International Olympic Committee; the International Paralympic Committee; National Olympic Committees; National Paralympic Committees; National Anti-Doping Organizations; and Major Event Organizations recognised by one or more of the aforementioned entities shall become Signatories by signing a declaration of acceptance or by another form of acceptance determined to be acceptable by WADA" [42]. Having the IOC desire the creation of esports Olympic games helps to validate the increased professionalism of esports and opens the door for WADA to accept them as part of the broader clean sport ecosystem. However, there are issues to focus on before making this hurdle feasible, which include being a Code Signatory of WADA and having a regulatory body for esports, as stated by IOC President Thomas Bach [43]. To understand this matter, we must first see what organisations exist and what their current measures are to deter doping and corruption within their events and tournaments.

Tweedie, Rosenthal and Holden [39] outlined the recent adoption and developments of anti-doping policies in esports within the Social Issues of Esports book by Tjønndal [44]. The first major esports league to adopt the WADA code and implement its anti-doping policy was the Electronic Sports League (ESL) [45] in 2015 following one incident of a player using Adderall [46]. This then saw the emergence of the Esports Integrity Commission (ESIC) in 2016 [47], the World Esports Association [48] and the International Esports Federation (IESF) [49]. Reviewing these separate esport leagues and organisations, they all differ in their efforts to tackle doping, promote anti-doping, or highlight corruption in esports.

The World Esports Association (WESA) doping section of their "Code of Conduct Teams and Players" (2017) handout has less than 1 page of text referring to doping from an 11-page document [50]. The Esports League (ESL) have their doping and anti-doping information spread across their three pro events covering Counter-Strike 2 (CS2), StarCraft 2 and DOTA 2 games [51]. Counter-Strike and StarCraft 2 have dedicated player guideline documents covering doping, prohibited substances, cheating, hacking and corruption. Within StarCraft 2, it is under Section 3, Players Responsivities and Limitations and Section 6, ESIC, Rule Violations, Punishments [52]. Finally, Counter-Strike's information features under Section 1 Definitions and Section 5 Rule Violations, Punishments and ESIC [53]. Nevertheless, DOTA 2 has no information on any of these topics from the ESL website. However, with ESL being the organisation body, they would apply similar rules to DOTA 2 akin to the other esport games they manage.

The largest promotion of anti-doping values within esports is the IESF, with its dedicated anti-doping policy, which has links to TUE forms, prohibited lists, e-learning platforms for educating athletes [54] and a comprehensive 63-page IESF Anti-Doping policy based on the WADA 2021 code [55]. They do not have a dedicated database or a list of sanctions for those caught cheating, but they do share some news stories that may involve someone cheating [56]. The Global Esports Federation (GEF) [57] approached WADA in March 2023 to create an anti-doping education program [43]. Regardless of this positive step, from their website, there is no mention of doping or anti-doping information anywhere. The only mention of punishments and cheating is from their Code of Ethics document under section 3, Fair Play, where they discuss prohibited substances and cheating [58].

The final organisation to review is the Esports Integrity Commission (ESIC), which states "The Mission of ESIC is to be the recognised guardian of the integrity of esports and to take responsibility for disruption, prevention, investigation and prosecution of all forms of cheating, including, but not limited to, match manipulation and doping" [59]. The ESIC is the only organisation that proactively works with stakeholders within esports, betting companies, and law enforcement agencies to tackle corruption, gambling syndicates, doping, and cheating within these events [60]. Like the IESF, the ESIC has sections on anti-doping, anti-corruption and prohibited lists. What makes the ESIC stand apart from their contemporaries is two things. Firstly, they have their gold standard for working with betting agencies to ensure sports integrity and eliminate betting corruption at esports events [61]. Secondly, they have a complete list of sanctions for anyone who has been caught breaching the ESIC integrity codes, with the lengths of said sanctions and the dates from issuing to ending, alongside the esports player name and accompanying links [62].

Below is Table 3, which outlines which organisations have or do not have the following anti-doping information on their website.

Table 3 – Comparison of Esport Organisations and Leagues Anti-Doping Efforts

Name of Organisation or League	Has a Database or List of Sanctions	Has an Anti-Doping Policy or Regulations	Has some mention of Anti-Doping	Has some mention of Punishments, Sanctions or Bans	Has TUE forms or Mentions them	Has E-Learning Links about Anti-Doping ran by WADA	Has a Prohibited List	Mentions WADA or supports WADA	Portal to Report Cheating or Doping	Has Betting Accreditation program
Esports League (ESL)*	No	Yes – in CS2 and StarCraft 2 Guideline documents	Yes – in CS2 and StarCraft 2 Guideline documents	Yes – in CS2 and StarCraft 2 Guideline documents	No but falls under ESIC	No	Yes – uses the ESIC one	No	No – but falls under the ESIC	No
Esports Integrity Commission (ESIC)	Yes	Yes	Yes	Yes	Yes	No	Yes – has their own prohibited list	No	Yes	Yes
Global Esports Federation (GEF)	No	Not directly – section 3 Fair Play of their Code of Ethics mentions punishments and cheating.	Not on their website but GEF approached WADA to create education program	No	No	Not on their website but GEF approached WADA to create education program	No	No	No	No
International Esports Federation (IESF)	No	Yes	Yes	Not directly – some mention of banning a national team but no dedicated page to bans or punishments.	Yes	Yes	Yes	Yes	No	No
World Esports Association (WESA)	No	Yes	Yes	No	No	No	No	Yes	No	No

*The ESL state that their competitions are part of ESIC, the Esports Integrity Commission [45]. This means that all rules and regulations of ESIC apply to all ESL tournaments. For more information they advise to refer to the ESIC website.

Reviewing anti-doping policies by country is another matter, as not all country's national esports organisations are part of one or multiple international esports governing bodies. Since WADA has the International Esports Federation (IESF) as their Code Signatory, 140 member nations have signed and agreed to the IESF rulebook [63] and support the federation being part of WADA. Irrespective of this success, when reviewing the requirements to become a member of IESF, there is no requirement to be part of WADA before joining IESF, promote anti-doping education or provide sanctions for cheating, doping or breaking any form of sports integrity rules.

As it stands, no governing body regulates the anti-doping sphere for the entirety of esports [39]. However, there may be signs of this change, as recently, the IESF and the Global Esports Federation (GEF) signed a memorandum of understanding with the focus on working together and the possibility of a merger to ensure they were not dividing the esports community between themselves [64]. Finally, the International Esports Federation (IESF) is currently the only Code Signatory for esports out of all esport organisations to be featured on the World Anti-Doping Agency's website [41] and has been affiliated since 2013 [65]. This still leaves the issues outlined by Tweedie, Rosenthal and Holden [39] that despite these organisations having these anti-doping doctrines and policies in place, it is not compulsory to be a member of said organisation as not all leagues and tournaments in esports are part of ESL, ESIC, GEF, WESA or the IESF. Therefore, there could be potentially more ADRVs occurring without prior knowledge as these events are occurring outside of these organisations and may not agree with WADA or align with these organisations' stances regarding esports governance.

Notwithstanding, the ESIC is the only organisation with a dedicated intelligence database to tackle doping and corruption within its esports leagues and events. It has a list of sanctioned or banned players, ranging from athletes to coaches, for various violations. However, it is limited in its design as some of the information only reveals players' gamertags or professional names and does not give a thorough background (e.g., nationality, age, sex, birth name and photograph of said individual). Furthermore, they do not mention the World Anti–Doping Agency on their website or are affiliated with them in any way. This is apparent when reviewing the prohibited list on their website as they have their list, which focuses heavily on attention deficit hyperactivity disorder (ADHD), non-stimulants and anxiety medications [66].

Returning back to WADA, their 2020 – 2024 strategic plan has no mention of esports, gaming or any of the above mentioned esport federations [67]. That is not to say there won't be in the future, but it is to point out in the last four years WADA has not viewed the field of esports as a priority. This may be because of some of the issues aforementioned which include lack of governing oversight, ineffective intelligence gathering and mixed support towards the WADA from the various esport federations.

Taking this all into account, the work will now review what has been debated and suggested to tackle some of these oversight, intelligence, educational issues that esport organisations face.

How to make the Game fair? Anti-Doping Research in Esports

There has only been one paper that has tackled the specific issue of WADA and esports and that is by Fashina [68]. The work discusses multiple topics with one of them being the differences between the ESIC and the IESF. This is how they are both the main contenders for leading anti-doping within esports but from two different perspectives. The ESIC having greater reach with access to more events, tournaments and esport organisations, their own esport prohibited list and including anti-corruption initiatives around betting and gambling [69].

However, the IESF would have the advantage of being the only code signatory with WADA, complying with the WADA prohibited list, having access to WADA's testing program and labs, access to the best anti-doping education and having more nation members [69]. Nevertheless, neither have featured at the big events and tournaments such as RiotGames and Blizzard whom host the most rewarding financial tournaments. As Fashina describes, "until there is a shift from the top down" from the organisations, then the issue of anti-doping compliance will continue to be a problem for esports. Fashina summaries the work by stating that ESIC can aspire to be like WADA but never can be WADA due to the financial resources and access to state of the art testing equipment it has. Finally, if the ESIC was to create their own Olympic-style event for esports it would fall short of meeting the similar standards for testing as WADA does for their events. Nevertheless, the ESIC could revert and become a code signatory of WADA and be the esport industry standard and uphold the values of sports integrity [70].

Work by Hwang [71] reported similar issues as reported by Fashina above regarding the oversight problems between different esport federations. Hwang correctly points out that the WESA prohibits gambling but not e-doping or the breach of a DDRV [72]. It only prohibits doping in the traditional sense and WESA does not provide industry guidance [73]. The WESA, ESIC and the IESF can only influence and govern what events and championships they are affiliated to and not interfere with any other esport event that has an opposing body involved [73] – hence you don't see the WESA working with the IESF on anti-doping issues for a particular esport event. Hwang proposes the esport federations model their approach off the world cycling body, the Union Cycliste Internationale (UCI). Using cycling and e-cycling as examples, Hwang's proposal is based upon the UCI governing all different genres of cycling akin to one esport federation (e.g., the IESF governing all different e-cycling games) [74]. Then, modelling the UCI regulations will include a specific section for each type of cycling the same way a tailored section should be applied to each type of e-cycling and their subsequent tournaments (road race, time trial and team events). Regarding the DDRV's put forward by Richardson, Smith and Berger [75], the UCI has a provision against cheating and doping and is the standard that all other genres of cycling fall under and abide by. The governing body for esports would apply these same DDRV's but the various e-cycling platforms would have to agree too. This would set an industry standard and ensure that all riders irrespective of e-cycling platform would abide by the same rules, sanctions and punishments. Hwang's proposal solves a lot of the issues regarding the many different esport games, the different types of esport games, the different tournament rules and events, the different hosts and the different international governing bodies for these esports.

It is not just the governing body landscape or the WADA being critiqued by esport academics. Continuing with the example of e-cycling through the lead platform named, "Zwift" [75]. They have come under scrutiny from multiple researchers due to many of their players have experienced some form of cheating and see a growing rise in these behaviours in their virtual realms. Zwift had their own anti-doping policy critiqued [75] and multiple research papers attributing a rise in hacking, cheating and doping cases affecting the e-cycling communities [19, 76-77]. Dyer and Talyor reported on the use of height and weight doping in e-cycling and found from their sample (n=638) that the e-doping was common practice, and the prevention measures and punishments were ineffective. The study concluded that the act of the avatar weight manipulation should be treated as an illicit practise [19]. Then Richardson, Berger and Smith [20] reported from their sample of 1467 riders that 43% of them have experienced some form of cheating during e-racing and 87% of the sample were in favour of enforcing a ban with a further 34% wanting this ban to extend to in-person traditional cycling. The reason for such considerable analysis into cheating in one esport is because many see it as being the lead esport for the IOC Olympic Esport Games.

Nevertheless, there is a growing base of literature to see cheating, hacking and or doping significantly inhibited across all forms of esports through meaningful sports integrity frameworks. However, there is more work that needs to be done to help address some of the issues discussed here but this paper cannot discuss them all. These include but are not limited to the following.

a) no unifying body for esports to conduct oversight into anti-doping [68 & 71],

b) the need for testing at esports events with evidence of testing being carried out and a list of results to follow who has been tested [14 & 22].

c) the need for a digital passport to not only tackle those who would digitally dope at these events but as a form of personal identification to verify who the individual is [78-79]

d) legitimate betting and gambling services for esports which is operated ethically [80-81]

e) factoring these issues into account with international and host nations laws and regulations [82-83].

f) cognitive enhancements, stimulants and the TUE forms [37-40].

To help policy makers move closer to meeting the WADA standard and for esports to feature at an Olympic Games the following recommendations will assist organisations in making that vision a reality.

Recommendations for Esport Organisations to Promote Clean Sport

1. Esport federations data sharing memorandum: All esport federations share their information on those athletes who have been banned for DDRV's. This encourages the sharing of intelligence and will assist any esport federation or game to be aware of potential cheaters or those who are already under surveillance for suspicious activity.

2. Public esports anti-doping and integrity database: Secondly, this will help to create a standalone database of those athletes who have been caught and can be publicly shared and viewed by sponsors, coaches, teams and other organisations who may need to find additional information on players before approaching them. This will expand upon the current database set by the ESIC but with additional information to include, birth name, gamer tag, nationality, age, sex, photo identification along with event details, esport game and dates of incident and suspension start and end dates.

3. Defined punishment criteria for offences: All esport federations, esport games, platforms and tournaments must come together to formulate a standardised list of bans and suspension criteria. That way, a consistent and replicable protocol of punishments can be handed out across all games and tournaments for all levels of professionalism within the community. This will send the message quickly to those who would be tempted to cheat that the organisations have a zero-tolerance policy. Lifetime bans and account deletions from the game should be a sufficient start to the requirement for punishments handed out [36].

4. Anti-doping education rolled out to all levels of esports: All esport games, tournament hosts and sponsors should promote the values of clean sport and fair play not only to their players but to the fans as well. Many sports already do this from a grass roots level and anti-doping education is a useful tool in helping to proactively educate younger athletes to be role models for the future. WADA have free resources for anyone to promote the values of anti-doping through their toolkit handbook [84] and e-learning platforms [85] to promote the accessibility and core values for clean sport as it forms one of their key pillars [86]. Tie in the WADA "Natural is Enough" campaign [87] with the ESL's, "#GGForAll movements [88] to promote fair and clean esports.

5. Anti-cheat software = digital passports for esports: To further strengthen the anti-doping toolkit, the biological passport for traditional sports should be applied to esports but instead of tracking the bloodwork for athletes - they should create a digital passport of their playing performance to assess if there are any abnormal markers. This is already being done in across many games including the likes of CS2 (Valve Anti-Cheat) [89], Call of Duty (Ricochet) [90] and e-cycling (IndieVelo) [91]. A digital passport can also be implemented and deployed as the foundation to the digital doping rule violations (DDRV's) as outlined by Richardson, Berger and Smith [75] regarding the anti-doping policy for the e-cycling platform called Zwift.

6. Game owners have to own the threats to their games integrity: The final recommendation asks for the game producers to take a seat at the table when it comes to anti-doping testing and education at their events. This is because they hold a say to how these esport events are ran when using their games and have a monopoly over viewers, broadcasters, advertisements and sponsors [92]. As a key stakeholder, they need to believe in the message of anti-doping and be direct that they do not want to see cheating, hacking or doping in their games and at their events.

Conclusion

In summary, the esports landscape is varied when it comes to the provision of anti-doping policies and databases for intelligence gathering on player sanctions. Some international governing bodies for esports are engaging significantly more towards promoting clean sport when compared to their counterparts. Despite these mixed efforts, the main issue remains of not having one unifying governing body to lead the esports leagues and tournaments to promote clean sport for all. In turn, there is no current database or information available to quantify the number of ADRV's or DDRV's across esports. Policy makers and esport organisations need to make considerable efforts to protect the integrity of their leagues from those would-be cheaters. Especially with the announcement from the IOC to create an esport Olympic games, where they would need to be aligned with the WADA code. It has been announced that during the Paris 2024 Olympic Games there will be discussions at the IOC Session on proposing the Olympic Esports Games which may reveal who will host the first ever games alongside what esports may feature at it [93].

To help support any future esport games, the recommendations laid out in this manuscript will provide organisers and stakeholders with a proactive framework to uphold anti-doping and clean sport values. These include, contributing to sharing information between leagues, treating anti-cheat software as an esports players digital passport, unified sanction and punishment criteria, anti-doping education programs for all levels of esport players, an accessible and published database of all known cheaters in esports and finally, having game producers state they want to implement anti-doping policies and eliminate cheating from their events and games.

Ethics

Ethical approval was not sought for this study as it does not contain any human participants for any intervention or questionnaire. All data and information used is already published and easily accessible online or in academic literature.

Conflicts of Interest and Source of Funding

The author confirms that there is no conflict of interest to date when writing or submitting this manuscript.

Acknowledgements

None

References

1. Finley, M.I. and Pleket, H.W., 2012. *The Olympic Games: the first thousand years*. Courier Corporation.
2. Stefani, R., 2016. *Olympic sports of the future*. éditeur non identifié.
3. Majid, K., Chandra, R. and Joy, A., 2007. Exploring the Growing Interest in the Olympic Winter Games. *Sport Marketing Quarterly*, *16*(1).
4. Geurin, A.N. and Naraine, M.L., 2020. 20 years of Olympic media research: trends and future directions. *Frontiers in Sports and Active Living*, p.129.
5. Paris2024. 2023. *Homepage for the Paris 2024 Olympic Games*. [Online] Available at: https://www.paris2024.org/en/ [Accessed 16 December. 2023].
6. MilanoCortina2026. 2023. *Olympic and Paralympic Winter Games Milano Cortina 2026*. [Online] Available at: https://milanocortina2026.olympics.com/en/ [Accessed: 16 December 2023].
7. The Guardian. 2022. *So what first attracted you to the multi-billion dollar esports industry? The Guardian*. [Online] Available at: https://www.theguardian.com/sport/2022/aug/06/multi-billion-dollar-esports-industry-commonwealth-games [Accessed: 16 December. 2023].
8. Olympics. 2023. *Olympic Esports Week 2023*. [Online} Available at: https://olympics.com/en/esports/olympic-esports-week/ [Accessed: 16 December. 2023].
9. British Esports. 2022. *Commonwealth Esports Champtionships 2022. British Esports Federation*. [Online] Available at: https://britishesports.org/commonwealth-esports-championships/ [Accessed: 16 December. 2023].
10. BBC News. 2022. *Commonwealth Games makes Mystery esports u-turn* 2022. *BBC News*. [Online] Available at: https://www.bbc.co.uk/news/technology-63232333 [Accessed: 16 December. 2023].
11. Fashina, O., 2021. Doping in Esports: How and to What Extent Can We Look to WADA for Guidance. *Sports Law. J.*, 28, p.19.

12. Rosenthal, R.R., 2021. A tough pill to swallow: Making the case for why esports leagues must adopt strict banned substance policies to prevent disability discrimination. *Va. Sports & Ent. LJ*, 20, p.76.

13. Bennett, C., 2023. The Cost of Being Cracked: Why the Call of Duty League Should Implement a Stricter Study Drug Regulation Policy. *Loy. Consumer L. Rev.*, 35, p.1.

14. Schubert, M., Eing, F. and Könecke, T., 2022. Perceptions of professional esports players on performance-enhancing substances. *Performance Enhancement & Health*, 10(4), p.100236.

15. Washington Post. 2020. *Nobody talks about it because everyone is on it': Adderall presents esports with an enigma*. [Online]. Available at: https://www.washingtonpost.com/video-games/esports/2020/02/13/esports-adderall-drugs/ [Accessed: 29 February. 2024].

16. Irwin, S.V. and Naweed, A., 2020. BM'ing, throwing, bug exploiting, and other forms of (un) sportsmanlike behavior in CS: GO Esports. *Games and Culture*, 15(4), pp.411-433.

17. DOT Esports. 2017. *What is match-fixing in esports?* [Online] Available at: https://dotesports.com/general/news/what-is-match-fixing-in-esports [Accessed: 26 February 2024].

18. Games Radar., 2024. *Underdog League of Legends scene rocked by massive match-fixing allegations impacting two thirds of players: "the stench of this will never leave".* [Online] Available at: https://www.gamesradar.com/underdog-league-of-legends-esports-scene-rocked-by-massive-match-fixing-allegations-impacting-two-thirds-of-players-the-stench-of-this-will-never-leave/ [Accessed: 18 June 2024].

19. Dyer, B. and Taylor, J., 2023. An Investigation Into the Attitudes of Virtual Cycling Participants Regarding Avatar Bodyweight Manipulation and Weight Doping. *Journal of Electronic Gaming and Esports*, 1(1).

20. Richardson, A., Berger, N. and Smith, P., 2023. Perceptions of Cheating and Doping in E-Cycling. *Sports,* 11(10), p.201.

21. Gran Fondo Daily. 2023. *Virtual Racer Fails Real World Anti-Doping Test NADO Italia Reveals.* [Online]. Available at: https://granfondodailynews.com/2023/10/07/e-doping-virtual-racer-tests-positive-for-real-world-anabolic-steroid/ [Accessed 29 February 2024].

22. Friehs, M.A., Klarkowski, M., Frommel, J., Phillips, C. and Mandryk, R.L., 2024. Fighting fair: community perspectives on the fairness of performance enhancement in esports. *Frontiers in Sports and Active Living*, 6, p.1330755.

23. Parry, J. and Giesbrecht, J. 2023. Esports, real sports and the Olympic Virtual Series. *Journal of the Philosophy of Sport*, pp.1-21.

24. Jenny, S.E., Manning, R.D., Keiper, M.C. and Olrich, T.W., 2017. Virtual (ly) athletes: where eSports fit within the definition of "Sport". *Quest*, 69(1), pp.1-18.

25. Olympics. 2023. *Exhibition matches | olympic esports series 2023. Olympics.* [Online] Available at: https://olympics.com/en/esports/olympic-esports-week/exhibitions [Accessed: 16 December. 2023].

26. EsportsCharts. 2023. *Olympic Esports Series 2023 — VR meets esports in IOC's attempts to give industry wings 2023. Esports Charts.* [Online] Available at: https://escharts.com/news/olympic-esports-series-2023-recap [Accessed: 16 December. 2023].

27. Olympics. 2023. *IOC president announces plans to create Olympic Esports games at opening of 141st IOC Session in Mumbai (2023) Olympics.com.* [Online] Available at: https://olympics.com/ioc/news/ioc-president-announces-plans-to-create-olympic-esports-games-at-opening-of-141st-ioc-session-in-mumbai [Accessed: 16 December. 2023].

28. WADA. 2023. *What we are. World Anti-Doping Agency.* [Online] Available at: https://www.wada-ama.org/en/who-we-are [Accessed: 16 December. 2023].

29. WADA. 2021. World Anti-Doping Code. 2021. Montreal. [Online] Available at: https://www.wada-ama.org/sites/default/files/resources/files/2021_wada_code.pdf [Accessed 16 December. 2023] Page. 2

30. WADA. 2021. World Anti-Doping Code. 2021. Montreal. [Online] Available at: https://www.wada-ama.org/sites/default/files/resources/files/2021_wada_code.pdf [Accessed 16 December. 2023] Page. 9-10

31. WADA. 2021. World Anti-Doping Code. 2021. Montreal. [Online] Available at: https://www.wada-ama.org/sites/default/files/resources/files/2021_wada_code.pdf [Accessed 16 December. 2023] Page. 13

32. WADA. 2021. World Anti-Doping Code. 2021. Montreal. [Online] Available at: https://www.wada-ama.org/sites/default/files/resources/files/2021_wada_code.pdf [Accessed 16 December. 2023] Page. 19-26

33. WADA. 2021. World Anti-Doping Code. 2021. Montreal. [Online] Available at: https://www.wada-ama.org/sites/default/files/resources/files/2021_wada_code.pdf [Accessed 16 December. 2023] Page. 32

34. WADA. 2021. World Anti-Doping Code. 2021. Montreal. [Online] Available at: https://www.wada-ama.org/sites/default/files/resources/files/2021_wada_code.pdf [Accessed 16 December. 2023] Page. 34

35. Backhouse, S., Griffiths, C., & McKenna, J., 2018. Tackling doping in sport: a call to take action on the dopogenic environment. British Journal of Sports Medicine, 52(23), 1485-1486.

36. Schöber, T. and Stadtmann, G., 2022. The dark side of e-sports–An analysis of cheating, doping & match-fixing activities and their countermeasures. *International Journal of Esports*, 2(2).

37. Frias, F.J.L., 2022. The "big red bull" in the esports room: Anti-doping, esports, and energy drinks. *Performance Enhancement & Health*, 10(1), p.100205.

38. Frias, F.J.L., 2022. Esports anti-doping advocates and their strange bedfellow: A matter of integrity and sport ethics. *Performance Enhancement and Health*, 10(1), p.100216.

39. Tweedie, J.W., Rosenthal, R.R. and Holden, J.T., 2022. Doping in esports. *Social Issues in Esports.*

40. Rosenthal, R.R., 2021. A tough pill to swallow: Making the case for why esports leagues must adopt strict banned substance policies to prevent disability discrimination. Va. Sports & Ent. LJ, 20, p.76.

41. WADA. 2023. Code Signatories. [Online] Available at: https://www.wada-ama.org/en/what-we-do/world-anti-doping-code/code-signatories. [Accessed: 16 December. 2023].

IJ ESPORTS

42. WADA. 2020. Policy for Acceptance for New World Anti-Doping Code Signatories. [Online] Available at: https://www.wada-ama.org/sites/default/files/resources/files/_final_policy_newcodesignatories.pdf [Accessed 29 Dec. 2023]. Page 3

43. Sport Resolutions. 2023. WADA and Global Esport Federation to work on Doping Education Programme. {Online} Sport Resolutions. Available at: https://www.sportresolutions.com/news/view/wada-and-global-esport-federation-to-work-on-doping-education-programme [Accessed 29 Dec. 2023].

44. Tjønndal, A. ed., 2022. *Social Issues in Esports*. Taylor & Francis.

45. ESL. 2023. Home – ESL. [Online] Available at: https://esl.com/ [Accessed 29 Dec. 2023].

46. The Guardian. 2015. Anti-doping in eSports: World's largest gaming organization will test for PEDs. The Guardian. [Online] Available at: https://www.theguardian.com/technology/2015/jul/23/anti-doping-in-e-sports-worlds-largest-gaming-organization-will-test-for-peds#:~:text=While%20ESL%20competitors%20had%20never [Accessed 29 Dec. 2023].

47. ESIC. 2023. ESIC – Esports Integrity Commission. [Online] Available at: https://esic.gg/. [Accessed 29 Dec. 2023].

48. WESA. 2023. WESA – World Esports Association. [Online] Available at: https://wesa.gg/. [Accessed 29 Dec. 2023].

49. IESF. 2023. IESF – International Esports Federation. [Online] Available at https://iesf.org/ . [Accessed 29 Dec. 2023].

50. WESA. 2017. WESA – Code of Conduct and Compliance for Teams and Players Contents. [Online] Available at: https://wesa.gg/wp-content/uploads/2019/05/WESA-Code-of-Conduct-Teams-and-Players-Final-03052019-1.pdf [Accessed 29 Dec. 2023].

51. Pro ESLGaming. 2023. *Pro Tour Game Gate - ESL Pro Tour*. [Online] Available at: https://pro.eslgaming.com/tour [Accessed 29 Dec. 2023].

52. Pro ESL Gaming. 2023. ESL Pro Tour StarCraft II Rulebook. [Online] Available at: https://cdn.eslgaming.com/files/tm/ESL_Pro_Tour_-_SC2_Rulebook.pdf [Accessed 29 Dec. 2023].

53. Pro ESL Gaming. 2023. ESL pro Tour Counter-Strike Rulebook. [Online]. Available at: https://drive.google.com/file/d/1wcWNdn5YJTopS8UqquBFR-xYCOVSWaHd/view [Accessed 29 Dec. 2023].

54. IESF. 2023. What is Doping. [Online]. Available at: https://iesf.org/what-is-doping/ [Accessed 29 Dec. 2023].

55. IESF. 2023. International Esports Federation Anti-Doping Rules. [Online] Available at: https://iesf.org/wp-content/uploads/2023/06/2021_IESF_Anti-Doping_Rules_230328.pdf. [Accessed 31 Dec. 2023].

56. IESF. 2023. Ecuadorian PUBG MOBILE Team Disqualified | WEC23. [Online]. Available at: https://iesf.org/2023/06/09/pubgm-ecuador-team/. [Accessed 31 Dec. 2023].

57. Global Esports. 2023. Home. [Online] Available at: https://www.globalesports.org/. [Accessed 31 Dec. 2023].

58. Global Esports. 2023. Resources. [Online] Available at: https://www.globalesports.org/resources. [Accessed 31 Dec. 2023].

59. ESIC. 2023. Who We Are – ESIC. [Online] Available at: https://esic.gg/about/. [Accessed 31 Dec. 2023].

60. ESIC. 2023. Members & Supporters – ESIC. [Online] Available at: https://esic.gg/members/ [Accessed 31 Dec. 2023].

61. ESIC. 2023. Esports Betting Product Standard – ESIC. [Online] Available at: https://esic.gg/esports-betting-product-standard/ [Accessed 31 Dec. 2023].

62. ESIC. 2023. Sanctions – ESIC. [Online] Available at: https://esic.gg/sanctions/ [Accessed 31 Dec. 2023].

63. IESF. 2023. Members. [Online] Available at: https://iesf.org/members/. [Accessed 31 Dec. 2023].

64. Esports Insider. 2023. GEF and ISEF Strategic Partnership. [Online] Available at: https://esportsinsider.com/2023/12/gef-iesf-strategic-partnership#:~:text=The%20International%20Esports%20Federation%20(IESF,across%20the%20global%20esports%20ecosystem%E2%80%9D. [Accessed 31 Dec. 2023].

65. IESF. 2013. IESF News - IESF became an Official Signatory of WADA. [Online] IESF. Available at: https://iesf.org/iesf-news-iesf-became-an-official-signatory-of-wada/ [Accessed 31 Dec. 2023].

66. ESIC. 2023. ESIC PROHIBITED LIST – ESIC. [Online] Available at: https://esic.gg/codes/esic-prohibited-list/. [Accessed 31 Dec. 2023].

67. WADA. 2020. Anti-Doping in a New Era Leading Strategic Plan. [Online] Available at: https://www.wada-ama.org/sites/default/files/resources/files/wada_strategyplan_20202024.pdf. [Accessed: 11 January. 2024].

68. Fashina, O., 2021. Doping in Esports: How and to What Extent Can We Look to WADA for Guidance. *Sports Law. J.*, *28*, p.19.

69. Fashina, O., 2021. Doping in Esports: How and to What Extent Can We Look to WADA for Guidance. *Sports Law. J.*, *28*, p.37-39.

70. Fashina, O., 2021. Doping in Esports: How and to What Extent Can We Look to WADA for Guidance. *Sports Law. J.*, *28*, p.48

71. Hwang, J., 2021. Cheating in E-sports: a proposal to regulate the growing problem of E-doping. *Nw. UL Rev.*, *116*, p.1283.

72. Hwang, J., 2021. Cheating in E-sports: a proposal to regulate the growing problem of E-doping. *Nw. UL Rev.*, *116*, p.1300-1301

73. Hwang, J., 2021. Cheating in E-sports: a proposal to regulate the growing problem of E-doping. *Nw. UL Rev.*, *116*, p.1303

74. Hwang, J., 2021. Cheating in E-sports: a proposal to regulate the growing problem of E-doping. *Nw. UL Rev.*, *116*, p.1311-1315

75. Richardson, A., Smith, P. and Berger, N., 2022. Zwift's anti–doping policy: Is it open to cheating?. *International Journal of Esports*, *1*(1).

76. Thorne, S., 2022. Trouble in Watopia: Negotiating Community Wellbeing and Cheating in Zwift eSports Cycling. *Eracle. Journal of Sport and Social Sciences*, *5*(1), pp.33-48.

77. Dyer, B., 2022. 'Virtually cycling': The impact of technology, cheating, and performance enhancement in bicycle e-racing. *Social Issues in Esports*.

ESPORTS

78. Sitko, S., Mateo-March, M. and Zabala, M., 2023. Antidoping 2.0: Is it time to add power data to the biological passport?. *Journal of Science and Cycling*, *12*(1), pp.1-2.

79. Puchowicz, M.J., Mizelman, E., Yogev, A., Koehle, M.S., Townsend, N.E. and Clarke, D.C., 2018. The critical power model as a potential tool for anti-doping. *Frontiers in physiology*, *9*, p.643.

80. Toomey, R.P., 2019. Upholding the integrity of esports to successfully and safely legitimize esports wagering. *Gaming Law Review*, *23*(1), pp.12-18.

81. Kelly, S.J., Derrington, S. and Star, S., 2022. Governance challenges in esports: a best practice framework for addressing integrity and wellbeing issues. *International Journal of Sport Policy and Politics*, *14*(1), pp.151-168.

82. Ronquillo, J., 2018. The Rise of Esports: The Current State of Esports, Its Impacts on Contract Law, Gambling, and Intellectual Property. *Intell. Prop. & Tech. LJ*, *23*, p.81.

83. Holden, J.T., Edelman, M. and Baker III, T.A., 2020. A short treatise on esports and the law: How America regulates its next national pastime. *U. Ill. L. Rev.*, p.509.

84. WADA. 2020. Sport Values in Every Classroom. [Online] Available at: https://www.wada-ama.org/en/sport-values-every-classroom [Accessed: 11 Jan. 2024].

85. WADA. 2021. About ADEL. [Online] Available at: https://www.wada-ama.org/en/what-we-do/education-and-training/about-adel [Accessed: 11 Jan. 2024].

86. WADA. 2021. Education and Training. [Online] Available at: https://www.wada-ama.org/en/what-we-do/education-and-training. [Accessed: 11 January. 2023].

87. WADA. 2023. WADA launches 'Natural is Enough' social media campaign. [Online] Available at: https://www.wada-ama.org/en/news/wada-launches-natural-enough-social-media-campaign [Accessed: 11 Jan. 2024].

88. ESL. 2022. GGFORALL - ESL. [Online] Available at: https://esl.com/ggforall/. [Accessed: 11 January. 2024].

89. Developer Valve Software. 2023. Valve Anti-Cheat/en - Valve Developer Community. [Online] Available at: https://developer.valvesoftware.com/wiki/Valve_Anti-Cheat/en [Accessed: 11 Jan. 2024].

90. Call of Duty.com. 2019. Call of Duty®: Modern Warfare® 3 (2023) Ricochet. [Online] Available at: https://www.callofduty.com/modernwarfare3/ricochet#:~:text=WHAT%20IS%20RICOCHET%20ANTI%2DCHEAT [Accessed: 11 Jan. 2024].

91. IndieVelo. 2024. indieVelo: Redefining Online Cycling and Physical Esports. [Online] Available at: https://indievelo.com/ [Accessed: 11 Jan. 2024].

92. Miroff, M., 2018. Tiebreaker: An antitrust analysis of eSports. *Colum. JL & Soc. Probs.*, *52*, p.177.

93. Esports Insider., 2024. *Olympics Executive Board to officially propose Olympic Esports Games at Paris Olympics.* [Online] Available at: https://esportsinsider.com/2024/06/olympic-esports-games-ioc-session [Accessed: 17 June 2024].