Report of the

INDEPENDENT OBSERVERS

Olympic Games
Tokyo 2020

world anti-doping agency

Table of Contents

1.0 Acknowledgements

The WADA Independent Observer Team mission would not have been possible without the collaboration and support of several partners. These include the Tokyo 2020 Organizing Committee for the 2020 Olympic and Paralympic Summer Games, the Japanese Anti-Doping Agency and the volunteers who spent all their energy to facilitate logistics and made our daily tasks achievable. A special thank you has to be addressed to the International Olympic Committee, the International Testing Agency and the Tokyo WADA-accredited laboratory for accommodating the WADA Independent Observer Team and its requests in a fully transparent manner.

2.0 Acronyms and Abbreviations

2021 World Anti-Doping Code	Code
Adverse Analytical Finding	AAF
Anti-Doping Administration and Management System	ADAMS
Anti-Doping Education and Learning Platform	ADEL Platform
Anti-Doping Organization	ADO
Anti-Doping Rule Violation	ADRV
Athlete Biological Passport	ABP
Athlete Passport Management Unit	APMU
Athlete Support Personnel	ASP
Atypical Finding	ATF
Blood Collection Officer	BCO
Canadian Centre for Ethics in Sport	CCES
Centralized Long-Term Storage Facility	CLTSF
Code Compliance Questionnaire	CCQ
Court of Arbitration for Sport Anti-Doping Division	CAS ADD
Doping Control Chaperone	Chaperone
Doping Control Chaperone Coordinator	CC
Doping Control Command Center	DCCC
Doping Control Form	DCF
Doping Control Officer	DCO
Doping Control Station	DCS
Doping Control Station Manager	DCSM
Dried Blood Spot	DBS
Erythropoietin	EPO
Erythropoietin Receptor Agonists	ERA
External Quality Assessment Scheme	EQAS
Functional Area	FA
Gonadotropin-Releasing Hormone	GnRH
Growth Hormone	GH
Growth Hormone Releasing Factor	GHRF
Growth Hormone Releasing Peptide	GHRP
Growth Hormone Secretagogue	GHS
Homologous Blood Transfusion	HBT
Haemoglobin-based Oxygen Carriers	HBOCs
In-Competition	IC
Insuline Growth Factor-I	IGF-I
Intelligence Collection Plan	ICP
International Doping Control Officer	IDCO
International Federation	IF
International Olympic Committee	IOC
International Standard for Laboratories	ISL
International Standard for Testing and Investigations	ISTI
International Standard for TUEs	ISTUE
International Testing Agency	ITA
International Testing Agency Secure Platform	ADCom
IOC Anti-Doping Rules applicable to the Olympic Summer Games Tokyo 2020	IOC ADR
Isotope-Ratio Mass Spectrometry	IRMS
Japan Anti-Doping Agency	JADA
Laboratory Information Management System	LIMS
Local Organizing Committee	LOC
Major Event Organization	MEO
National Anti-Doping Organization	NADO
National Olympic Committee	NOC
Out-of-Competition	OOC
Professional Worldwide Controls	PWC

PWC Paperless Software	MODOC
Registered Testing Pool	RTP
Results Management	RM
Regional Anti-Doping Organization	RADO
Sample Collection Personnel	SCP
Technical Document for Sport Specific Analysis	TDSSA
Test Distribution Plan	TDP
Therapeutic Use Exemption	TUE
Therapeutic Use Exemption Committee	TUEC
Tokyo 2020 Olympic Games	Games
Tokyo 2020 Organizing Committee for the 2020 Olympic and Paralympic Summer Games	TOCOG
WADA Independent Observer Team	IO Team
WADA Laboratory Expert Advisory Group	Lab EAG
Whereabouts Rooming Application	App
World Anti-Doping Agency	WADA

3.0 Executive Summary

The Tokyo 2020 Games were an unprecedented demonstration of unity and solidarity as the world came together for the first time following the onset of the COVID-19 pandemic for an Olympic Games focused on the pure essentials: a celebration of athletes and sport. This sense of solidarity was critical to the success of the Tokyo 2020 Games following their historic one-year postponement, especially in the establishment of the Tokyo 2020 Playbooks and guidelines for safe and secure participation and operations. The Playbooks set a new standard for large-scale sporting events and ensured that everyone from athletes to the media would be able to safely take part in the Games.

Role of the ITA

The IOC had announced before the PyeongChang 2018 Winter Olympic Games its intention to outsource most of its anti-doping program to the International Testing Agency (ITA). This not-for-profit body, which was formally established under Swiss law in February 2018, is intended to support IFs and MEOs such as the IOC with their obligations under the Code by providing independent doping control and other anti-doping services to those organizations that wish to delegate parts or all of their anti-doping programs. In Tokyo, for the first time, the ITA had the overall responsibility for the coordination and management of the anti-doping program of the Olympic Games, from defining the testing strategy in the months leading up to the Games right through to the results management of any case that arose during the period in which the IOC had jurisdiction over the athletes that competed at the Games. Twenty-two ITA staff members travelled to Tokyo to ensure that all aspects of the anti-doping program were delivered to the highest level. The IO Team acknowledges throughout the report the many benefits of this new management model when compared to past Olympic Games. In Tokyo, the ITA was responsible for leading the anti-doping program on behalf of the IOC, and the IOC's role, as the Code signatory, was limited to supervise and ensure that the anti-doping program implemented during the Games was delivered in compliance with the Code and the International Standards.

The ITA, therefore, became the main point of contact for the routine activities of the IO Team. The communication between the IO Team and the ITA was regular and collaborative, based on reciprocal trust and sharing of experiences.

In the weeks before the start of the Games, meetings between the IO Team and the ITA took place to ensure the IO Team was well briefed on the Games-time program and to lay the collaborative groundwork between both teams. During these meetings, the ITA presented important procedures, workflows, how the outcomes of the Pre-Games Expert Group (Expert Group) recommendations were going to be incorporated into the Games-time Test Distribution Plan (TDP), and the sport-specific protocols which the ITA signed with all IFs participating in the Games.

During the Games, the IO Team Chair and/or Vice-Chair met regularly with the ITA, TOCOG and the IOC to report on the observations gathered by the IO Team from each accredited venue. During these meetings, the ITA updated the IO Team representatives on testing statistics and shared with them any relevant information.

In order to enhance the safety and security of the communication between both parties, the ITA requested the IO Team to use a secure platform (ADCom) through which all communications were recorded in an email-free environment. The ITA encouraged all parties, including all Anti-Doping Organizations (ADO)s, to use ADCom for all communications with the ITA. For example, an IF or a NADO could use ADCom to communicate target testing requests of specific athletes. This platform proved to be a very efficient and secure communication tool and it should be maintained for future Games.

Besides the observations made in the field by the IO Team, there were many fruitful and open discussions held with the ITA on the following topics:

- Risk Assessment
- Test Distribution Plan
- Targeting and follow-up testing of athletes
- Use of the Anti-Doping Administration and Management System (ADAMS)
- Management of the Athlete Biological Passport (ABP)
- Management of Therapeutic Use Exemptions (TUEs)
- Intelligence gathering procedures; and
- Results Management (RM)

TOCOG was responsible for all the logistical aspects of the program and attended the daily meetings between IO Team and ITA. TOCOG also recruited and managed the Sample Collection Personnel (SCP) with the Japan Anti-Doping Agency's (JADA) support and implemented the TDP according to the ITA's instructions.

During the Games, the IO Team visited 33 out of 39 competition venues to observe the implementation of the testing program, with a particular focus on the selection and notification of athletes selected for the sample collection process. The IO Team also made daily visits to the Tokyo WADA-accredited laboratory to observe the receipt, analysis and reporting of the urine and blood samples received.

The IO Team was unable to conduct observations at six venues due to a number of logistical issues, which were mainly related to the limited dedicated transportation provided to the IO Team by TOCOG and to the COVID-19 protocols that were in place, which resulted in movement restrictions for the IO Team.

Besides the shortfall of transportation logistics, one other hurdle brought to the attention of the IOC and WADA in advance of the Games was the accreditation status of the International Doping Control Officers (IDCOs) which were under TOCOG and therefore considered as 'local workforce'. The main challenge observed here was the access to transport and the procedure to obtain work permits for potential replacement of IDCOs due to the COVID-19. For obvious logistical matters, this could not be addressed when the matter was raised. However, for future Games, the accreditation for IDCOs should be reviewed in order to provide a similar status to International Technical Officials. The IO Team also believes this would further assist in the recruitment of experienced IDCOs to participate. As reported in prior IO reports, IDCOs are a crucial component of the sample collection team at Olympic Games due to their experience, expertise, and cultural diversity.

Conclusions

In conclusion, despite some initial difficulties faced with the restrictions imposed by the COVID-19 pandemic, the occasional challenges to get accurate whereabouts information from athletes and/or National Olympic Committees (NOCs) (see section 7), the implementation of the paperless system (see section 12), the withdrawal of at least 40% of the IDCOs with significant experience from previous Games due to international travel restrictions (see section 13), and communication challenges with chaperones not being fluent in English (see section 14), more than 6,000 samples were collected, with a sufficient and effective breakdown of in-competition (IC) and out-of-competition (OOC) tests that led to six Adverse Analytical Findings (AAFs) reported by the Tokyo Laboratory.

The anti-doping program was delivered in accordance with the Code and International Standards.

Furthermore, the IO Team congratulates everyone involved for taking into consideration the IO Team recommendations and making any necessary adjustments in a timely manner to solve the minor observations raised in specific circumstances.

A more detailed assessment of the anti-doping program, its various components and accurate testing and AAF statistics are outlined within this report.

4.0 WADA Independent Observer Team

The Independent Observer (IO) Team was composed of the following members (from top left to right and bottom left to right):

- **Dr. Osquel Barroso**
  Senior Associate Director, Science & Medicine, Laboratories, WADA (CUB/ITA)
- **Greg McKenna**
  Head, Biathlon Integrity Unit, International Biathlon Union (UK)
- **George Tsamis**
  Senior Manager, Testing, WADA (Vice-Chair), (GRE)
- **Kenny Lee**
  Manager, Asia and Oceania Office, WADA, (KOR)
- **Gina Gill Herrera**
- Manager, Athlete Biological Passport and Therapeutic Use Exemptions, National Anti-Doping Agency of Colombia (COL)
- **Marissa Sunio**
  Senior Counsel, Regulatory Affairs and Litigation, Legal Affairs, WADA (USA)
- **Dr. Francesca Rossi**
  Director of Testing, National Anti-Doping Agency of France (ITA)
- **Dr. Aya Nakitanda**
  President, National Anti-Doping Agency of Uganda; Board member, Africa Zone V Regional Anti-Doping Organization; former athlete (UGA)

5.0 Pre-Games Activities

The IO Team focused its observations on the Games and the actual Games period; however, since the anti-doping program implemented in Tokyo was the last piece of a puzzle which commenced in 2019, it is important to mention the pre-Games initiatives launched by the ITA on behalf of the IOC to optimize the Games' testing program and protect clean athletes participating in Tokyo.

5.1 Pre-Games Expert Group

The ITA established and coordinated a Pre-Games Expert Group, consisting of a pool of 10 specialists from IFs – representing both team and individual summer Olympic sports – and National and Regional Anti-Doping Organizations (NADOs/RADOs). These experts undertook an extensive risk assessment on a large population of athletes that were likely to qualify for the Tokyo Games from all 33 participating sports disciplines. It considered data such as participating countries, risks and history of doping, as well as testing statistics in these countries, the physiological profile of the sport, individual athlete testing history data, intelligence received, and other relevant factors. The outcome of this evaluation was over 25,000 athlete test recommendations that the Pre-Games Expert Group issued to NADOs, RADOs and IFs by the end of 2020, in order to close potential testing gaps for athletes of higher risk level in the build-up to the Games.

In the individual sports, the test recommendations varied from one to six tests by athlete depending on the level of the risk of the athlete's sport/discipline. The number of test recommendations, however, was not revised closer to the Games. Therefore, for IFs and NADOs that conducted limited testing in the first part of 2021 (which could have been due to limitations linked to the COVID-19 pandemic), the original number of test recommendations would not be proportionate or potentially up to date if athletes who had qualified were not in the original set of athlete test recommendations. For team sports, the Pre-Games Expert Group recommended a number of tests for each team without providing specific athlete names to the relevant ADO due to the changing nature of the athlete members in these sports.

IOC/ITA Recommendation no. 1:
The IOC/ITA could consider revising the Pre-Games Expert Group recommendations (increase/decrease the number to be fit for purpose) per athlete for IFs and NADOs in the period closer to (e.g., two months before) the Games to ensure they are proportionate and as accurate as possible.

IOC/ITA Recommendation no. 2:
The IOC/ITA should consider through its Pre-Games Expert Group the targeting of specific athletes as part of the team sport test recommendations provided to IFs and NADOs.

After the recommendations were shared with IFs, NADOs and RADOs in December 2020, the Pre-Games Expert Group regularly came together (every two-three weeks) to monitor implementation of the recommendations via a digital sharing platform and continuous monitoring in ADAMS of the testing history of the relevant athletes. On 13 May 2021, the Pre-Games Expert Group shared with the ITA a comprehensive list of athletes of higher risk to be tested by the ITA (see section 5.2 below). On 13 July 2021, when the work of the Pre-Games Expert Group was completed, the ITA reported a testing implementation rate of 80% on athletes that qualified for Tokyo.

Following a final monitoring phase at the beginning of July 2021, the Pre-Games Expert Group shared its testing recommendations with the ITA for more than 2,500 athletes across all sports and disciplines that were considered for the ITA's Games-time TDP to continue to avoid any potential testing gaps. These recommendations were the basis for the list of athletes who were target-tested during the out-of-competition (OOC) period of the Games.

5.2 Increased Testing Jurisdiction in advance of the Games

According to Article 5.2.2 of the IOC Anti-Doping rules applicable to the Olympic Summer Games Tokyo 2020 (IOC ADR), the ITA had jurisdiction to conduct OOC testing on any athlete entered to, or who may be entered to, participate in the Games starting from 13 May 2021 up until (and including) the day prior to the opening of the Athlete Village (12 July 2021). For previous Games, the IOC's testing jurisdiction began on the day the Athlete Village opened. These additional two months of testing jurisdiction allowed the ITA to coordinate tests on athletes prior to their arrival in Tokyo who may have not been sufficiently tested leading up to the Games. According to the data provided by the ITA, 140 athletes from 54 different countries were tested in the period from 13 May 2021 to 12 July 2021. In the period of the IOC extended jurisdiction in the two months prior to the Games, one Adverse Analytical Finding (AAF) was reported in the sport of wrestling. The decision to extend the period of the IOC jurisdiction is commendable, and the IO Team encourages the IOC to continue with this initiative for future Games.

IOC/ITA Recommendation no. 3:
The IO Team recommends to the IOC to continue extending testing jurisdiction in advance of future Games to allow the ITA to coordinate tests on athletes who may have not been sufficiently tested in the build-up to future Games.

5.3 Long-term Storage of Samples

The IOC announced, during the World Conference on Doping in Sport in Katowice in November 2019, that it would dedicate a budget to develop a global long term-storage program and to provide a systematic approach to enable IFs and NADOs to store their samples collected prior to the Games at no additional cost. As detection methods are constantly being improved and updated, under the World Anti-Doping Code, samples can be stored for up to ten years. In 2020, the IOC funded the development of a Centralized Long-Term Storage Facility (CLTSF) for the storage of doping control samples that were collected at the Summer and Winter Olympic Games. The CLTSF is coordinated and managed by the ITA. Over the years, the IOC has shown the effectiveness of storing samples and conducting further analysis based on intelligence and enhanced or new detection methods. To date, over 150 Adverse Analytical Findings have been detected following further analysis of stored samples from the Olympic Games since 2008. Under this program, the ITA invited all ADOs to store, for free, the samples they had collected from athletes likely to compete at the Games in the build-up period to the Games, after they had been analyzed at a WADA-accredited laboratory. According to the latest data published by the ITA on 13 September 2021, more than 40 ADOs, including all Summer IFs, reached out to the ITA to express their interest in participating in this project. While all ADOs should have a long term-storage strategy, the IO Team encourages the IOC to continue to fund similar projects for all future Games.

IOC/ITA Recommendation no. 4:
The IO Team encourages the IOC to continue to fund similar projects like the global long term-storage program for future Games.

ADOs Recommendation no. 1:
The IO Team encourages all ADOs to make use of the global long term-storage program in the future and store samples collected from athletes who will participate in future Olympic Games at the CLTSF or at a WADA-accredited laboratory for potential further analysis within the ten-year statute of limitation period under the Code.

6.0 Test Distribution Planning

6.1 Risk Assessment

The TDP for the Games was developed based on a detailed assessment of doping risk and was reviewed in advance of the Games by WADA. The ITA developed this risk assessment in three steps:

i. The focus of the first step was to define the number of tests and specific analysis for each Olympic discipline. This was based on the physiological risk of each discipline, the number of athletes per discipline and the number of medal events.
ii. The second step included the development of a comprehensive risk assessment by country based on the prevalence of political or economic corruption within society[1], the ratio between analytical Anti-Doping Doping Rule Violations (ADRVs) in the country and the number of samples collected by the local NADO (based on WADA's 2017 and 2018 annual ADRV reports), and the history of doping in the sport/discipline (number of analytical and non-analytical ADRVs since 2013).
iii. The last step was to target high-risk athletes based on individual performance (ranking), individual testing history (ADAMS test reports) and any additional information received.

In addition to the prohibited substances analyzed under a standard sample analysis, samples were also analyzed for additional prohibited substances based on WADA's Technical Document for Sport Specific Analysis (TDSSA). It is noted that the Games' TDP remained flexible and dynamic (both for out-of-competition (OOC) and in-competition (IC) testing) and was reviewed and updated constantly based on additional information received. The ITA should be commended for its continuous monitoring of the TDP and its reactivity.

6.2 Out-of-Competition Testing

The starting point for the selection of athletes for OOC testing during the period of the Games was the list of athletes provided by the Pre-Games Expert Group. The selection list included only targeted athletes for both team and individual sports. The focus was on athletes who were of higher risk and had limited testing history leading into the Games.

OOC testing took place in all three Athlete Villages (Olympic, Sailing and Cycling Villages) with the majority of OOC testing being undertaken in the Olympic Village. The IO Team notes that due to the COVID-19 pandemic, the decision to allow athletes to enter the Athlete Villages only five days before their first day of their competition or their official training and leave a maximum of two days after the last day of their competition, had a significant impact on the OOC testing plan. This meant that on-site athlete availability for OOC testing was limited. Additional restrictions were imposed on athletes coming from COVID-19 high-risk 'red' countries who were required to isolate on arrival to Japan for three days in a dedicated hotel or in one of the Athlete Villages, and therefore the TOCOG doping control team was not permitted to have access to them. Whilst the Japan Anti-Doping Agency (JADA) received special authorization from the Japanese government to have access to athletes in training camp areas and be able to conduct OOC testing, JADA decided not to plan test missions during the first three days of an athlete's arrival to protect the Doping Control Officers' (DCO) health and safety. This meant that the ITA had to adapt its TDP and conduct a large amount of its OOC testing program until the end of the Games. The OOC strategy deployed by the ITA proved to be efficient and effective.

In addition to the OOC testing that was conducted by the IOC within the two-month period leading up to the Games (see section 5.2), a plan was also in place to test athletes during the Games Period who either stayed in a private accommodation instead of the Athlete Villages, or who arrived in Japan or nearby countries to acclimatize prior to entering the Athlete Villages. The sample collection agencies used for this testing were mainly JADA, for tests conducted in Japan, and private sample collection agencies, for tests conducted outside of Japan. According to ADAMS data, 51[2] samples were collected from 30 athletes outside of the Olympic venues during the Games Period. As mentioned earlier, one important factor that prevented some of this testing

[1] 2020 Corruption Perception Index from www.transparency.org.
[2] 39 samples collected by JADA and 12 samples collected by private sample collection agencies during the period 13 July 2021 - 8 August 2021.

to occur was the very strict COVID-19 protocols in place for people outside the 'bubble' to enter locations where athletes were based in Japan.

IOC/ITA Recommendation no. 5:
Whilst the IO Team understands the limitations and impact the COVID-19 protocol had during the Games and the difficulties in coordinating testing outside of the Olympic venues during the Games Period, for future Games, the IOC/ITA should continue to put in place a testing program (with a contingency of tests) for athletes outside of Olympic venues and continue to enhance its coordination efforts with the local NADO and other ADOs.

6.3 In-Competition Testing

IC testing selections were based on the relevant risk assessment of the sport/discipline. The higher the risk of the sport/discipline was, the greater number of tests were allocated during the event and in the finals. All medalists and a number of placed athletes were tested. This depth of testing provides a level of security to the podium in case of a future ADRV for a medalist due to further analysis of a stored sample. Any athlete upgraded to a medal would likely have a sample in long term storage for further analysis prior to that medal being awarded. However, since the majority of IC testing was conducted on days with a medal event of a sport/discipline, this resulted in a number of days during preliminary rounds or even quarterfinal/semifinal rounds for certain sports (mainly team sports) for which no testing was allocated.

The ITA made significant attempts to increase the target testing element of the IC selection outside of top positioned athletes and should be commended since the IO Team observed a number of targeted selections in team or individual sports based on either intelligence e.g., recommendations by the laboratory or the relevant Athlete Passport Management Unit (APMU) or on selections made by the ITA representatives present at competition venues. When the selections were conducted randomly, the Doping Control Station Manager (DCSM) would utilize an ITA selection toolkit, which would ensure that any random selection was conducted objectively. This ITA selection toolkit was used during the Games for the first time. The purpose of this toolkit was to harmonize random drawing procedures across all sports and venues and have an easy and straightforward process for Sample Collection Personnel.

7.0 Whereabouts Collection

7.1 Rooming Application

Issues surrounding athletes providing whereabouts information during the Olympic Games have been identified in previous IO missions. Whereabouts information was previously submitted by athletes and their National Olympic Committees (NOCs) in various formats, languages and file types, and managing this area was extremely time-consuming and/or very difficult.

To assist with the OOC testing plan and harmonize the provision of rooming information by NOCs, the ITA developed a dedicated whereabouts rooming application (App). With the assistance of the respective NOC, accurate rooming lists (including details such as the building and room number) for the Games period had to be provided within 24 hours of the athlete's arrival at one of the Athlete Villages. The App allowed NOCs to upload the rooming information of all athletes belonging to their delegation, which then permitted the ITA and TOCOG to check the information submitted. Athletes who stayed outside an Athlete Village (e.g., in a private accommodation) had to provide via their NOC detailed information about their overnight accommodation. Any changes/updates to this information had to be updated in the App as soon as possible. According to the IOC ADR, failure to provide this information may result in measures or sanctions in application of Rules 59.1 and 59.2 of the Olympic Charter without prejudice to any other consequences foreseen in the IOC ADR.

Access to the rooming information was limited to the authorized TOCOG members working on the OOC testing plan in the Doping Control Command Center (DCCC). The information would then

be passed to the Doping Control Station Manager (DCSM) of the respective Athlete Village in order to appoint Sample Collection Personnel to locate and test the requested athletes. It was observed in the first days during the OOC period that whilst the athletes' NOC provided the information via the App on time, the information was not always passed by the DCCC to the DCSM on time. The process was amended quickly and subsequently ran smoothly.

NOC administrators had access to the App from 1 July 2021 on and were requested to provide athletes' whereabouts information, at a minimum, from 13 July 2021 to 8 August 2021 and during the whole period of the athletes' stay in Japan. However, due to the decision to only allow athletes to enter an Athlete Village five days before their first day of competition or their official training, the App was updated by the NOC with information as soon as the athlete would arrive in one of the Athlete Villages. The ITA developed training material (a User Manual and a training video) for the purpose of training NOCs to the use of the App and provided both remote and on-site in-person support to NOCs encountering issues in the provision of rooming information. Later in the Games, for NOCs that were still not familiar with the App, the ITA gave exceptionally the option to submit the relevant information to the ITA and the ITA would upload it into the App on their behalf.

By 4 August 2021, and according to the latest statistics provided by the ITA, 96% of the participating athletes and 88% of the participating NOCs had submitted whereabouts via the App. At the beginning of the second week of the Games, the ITA's Legal Team sent reminders to the remaining NOCs to submit the missing whereabouts information for their athletes. This communication included the possible consequences if they failed to comply. In some instances, warnings were issued to those NOCs that did not comply with the requirement; however, no case was referred for sanctioning under the Olympic Charter.

For athletes in an IF's or NADO's RTP, the IO Team is of the opinion that using two whereabouts systems (ADAMS and the App) for the same period of time can be time-consuming and might lead to duplication of work. However, the introduction of the App was an improvement to the management of the non-Registered Testing Pool (RTP) athlete whereabouts in comparison to previous Games.

7.2 Use of ADAMS

According to the ITA, almost 7,000 participating athletes provided some level of whereabouts information in ADAMS. However, it was unknown to the ITA if these athletes were currently in an ADO's RTP or Testing Pool. The ITA held the relevant information only for those IFs for which they functioned as the Delegated Third Party, i.e., the IFs that contracted the ITA to manage their OOC testing program outside of the Olympic Games and whose data the ITA had therefore access to in ADAMS. There was limited coordination on this aspect with the other IFs and/or NADOs in advance of the Games to determine who was in the RTP of NADOs and IFs. It is recommended that the ITA, with the support of WADA and the ADAMS Team, improves coordination on this aspect for future Games. However, the IO Team is of the opinion that this information should be easily accessible in ADAMS to ADOs that have jurisdiction over these athletes e.g., the IOC/ITA two months in advance of the opening of the Athlete Villages to the end of the Games period.

Based on information provided by the ITA, during the Games athletes often failed to update their ADAMS whereabouts information. As a result, a high number of filing failures (almost 100) were raised by the ITA and forwarded to the relevant ADO for further follow-up.

Whereabouts information in ADAMS was utilized by the ITA to locate athletes selected for OOC testing. However, due to the limited Sample Collection Personnel resources, it was not always possible to wait for 60 minutes when attempting to notify an RTP athlete in their 60-min timeslot. As a result, nine Unsuccessful Attempt Reports were reported by the ITA to a total of four IFs.

WADA Recommendation no. 1:
WADA and its ADAMS Team should ensure that ADOs e.g., IOC/ITA that have jurisdiction over athletes who participate in future Games have easy access to RTP information to enable them to conduct an effective OOC testing program from the day such jurisdiction is in place.

IOC/ITA Recommendation no. 6:
The IO Team recommends that the ITA continues to collaborate with all IFs and NADOs to ensure that the ITA is promptly made aware of which athletes are included in an ADO's RTP.

IOC/ITA Recommendation no. 7:
The ITA, on behalf of IOC, should ensure that when making an attempt to notify an athlete included in an RTP during the OOC testing period, and during the athlete's chosen 60-minute timeslot, DCOs follow procedures that are in line with the International Standard for Testing and Investigations (ISTI). For example, once the DCO arrives at the location specified for the 60-minute timeslot, if the athlete cannot be located immediately, the DCO should remain at the location for whatever time is left of the 60-minute time slot. During this remaining time, the DCO should do what is reasonable in the circumstances to try and locate the athlete.

8.0 Athlete Biological Passport

The Athlete Biological Passport (ABP) management procedure was different from previous Olympic Games. The main change concerned the use of all existing Athlete Passport Management Units (APMUs) (a total of 16 in the world) instead of the appointment of a small number of external ABP experts to evaluate ABP profiles and deliver recommendations. The aim of this change was to ensure that:

a) Passports were reviewed by APMUs/experts experienced with Passports for each sport/discipline;
b) APMU recommendations were recorded in ADAMS (in response to the recommendation made by IO Teams at previous Games);
c) Compliance with applicable data access regulations was maintained with respect to access to ABP data; and
d) For the athletes tested from 13 July 2021 to 8 August 2021 with the IOC as Testing Authority and whose profile was not reviewed by an APMU (1.8% of all urine samples and 7% of ABP blood samples), WADA's ABP Team was available to review the profiles.

The ABP process implemented in Tokyo can be split into four different steps:

1) Collection, analysis and reporting of results in ADAMS:
   The samples collected were analyzed at the Tokyo WADA-accredited laboratory and the results reported in ADAMS.

2) Recommendations with follow-up actions received from the APMUs:
   For each sample collected, the profile was analyzed by the APMU working regularly with the ADO that was the Passport custodian of the athlete at the time of the Games. Any APMU recommendation for follow-up analysis or reactive testing at the Games was delivered through the ADCom platform.

3) Follow-up testing strategy by the ITA Testing Team:
   The ITA Testing Team incorporated the APMUs' recommendations into the daily TDP.

4) OOC and IC testing implementation:
   Testing Orders were created and forwarded to the Doping Control Command Center for immediate implementation.

Whilst the IO Team agrees that the overall process looked to be fit for purpose, in practice the involvement of 16 APMUs was difficult to manage. The ITA reported often at the daily meetings with

the IO Team that the lack of responsiveness of some of the APMUs resulted in the ITA having to spend unnecessary time in contacting APMUs to gather information related to athletes to be re-tested or to additional analysis of samples e.g., erythropoietin (EPO) or Isotope Ratio Mass Spectrometry (IRMS). This information should be available to the ITA Testing Team in real time.

WADA Recommendation no. 2:
WADA should explore a solution that would centralize the ABP evaluation process and better fit the need to quickly implement follow-up testing missions or additional analysis of collected samples. This could include the appointment of the APMU of the Olympic/Paralympic laboratory as the Games APMU with the support of a selected pool of experts working in other APMUs.

9.0 Intelligence

For the purpose of this section, "intelligence" is defined as information gathered or collated, then analyzed and shared with those parties tasked with mitigating the threat posed by doping during the Games.

Intelligence can provide insights, often not immediately available, that warn of potential threats and opportunities. It can assist in assessing the potential outcomes of any proposed policy options, provide subject profiles on those who may be doping, and may inform officials, such as local law enforcement, of other potential threats to the safety and security of the Games. In short, a good intelligence strategy, which includes a well-constructed collection plan, is a key element of any effective anti-doping program.

9.1 Pre-Games Intelligence Related Activities

Prior to the Games, the ITA produced a document titled 'Anti-Doping Information and Intelligence Collection and Processing Policy'. This provided high-level guidance on the ITA's approach, intelligence and investigation activities prior to and during the Games. It is clear that the ITA considered a wide range of intelligence sources, both within the sports integrity environment and external sources, such as law enforcement agencies and JADA. This approach allowed the ITA to ingest and disseminate several information reports, received from this network to relevant law enforcement bodies.

Information relating to the newly established ITA whistle-blower platform, 'REVEAL', was provided to all relevant stakeholders, alongside a request to ensure that all those attending the Games had knowledge relating to how to access the platform and its level of confidentiality.

The ITA drafted and circulated a document named 'Tokyo 2020 Clean & Waste FA (Functional Area) Suspicious Materials Policy', which dealt with the reporting of suspected doping paraphernalia or suspicious behaviour. This document was aimed at providing support personnel present at the Games, and in particular accommodation service staff (cleaners, maintenance operatives and housekeeping), with guidance on what objects to look out for during the event, such as needles, blood transfusion equipment, together with information on how to take appropriate action. This was an excellent initiative, providing further opportunities for valuable intelligence collection.

A key component of the ITA's intelligence strategy is information sharing, and efforts were made, prior to the Games, to encourage the sharing of information from stakeholders such as IFs, NADOs and RADOs. This included the development of a 'Memorandum of Cooperation' with Japanese Authorities. During such an event, these agreements and the development of trusted working partnerships are vital elements of an intelligence gathering strategy. Such cooperation should assist with seamless intelligence flows with key contributors, such as the national order force or the local police.

IOC/ITA Recommendation no. 8:
The IO Team recommends the formulation of an Intelligence Collection Plan (ICP) which would support the ITA's Intelligence Strategy and ensure that information collection is maximized through a well-structured and systematic process. ICPs are used by many law enforcement and intelligence services, to ensure there is a clear understanding of intelligence collection capabilities to enable appropriate tasking of all available resources, thus allowing them to gather and provide pertinent information within any given time limits.

9.2 During the Games

The Doping Control Command Center (DCCC) was acting as a central point of contact for all matters, including intelligence collection. Such central command post, with an embedded intelligence cell, is considered best practice.

ITA staff were on hand at many of the venues, providing advice and support on matters, such as intelligence collection, to Doping Control Station Managers (DCSMs) or other members of TOCOG.

What appeared to be a basic, but effective, in-house internal information management tool, using the SharePoint platform, was used. Besides that, additional tools accessible to the anti-doping and sport community were in place, such as ADCom (for ADOs, NOCs, WADA, IO Team, IOC, ITA staff, etc.) and ITA's reporting platform 'REVEAL'. This allowed the ITA to receive information and further develop it through an action-based process. This appeared to show what, if any, activities were carried out in response to intelligence received.

It should also be noted that on a few occasions, when the IO Team provided information on suspicious behaviour of athletes to the ITA via ADCom, the information submitted was taken into consideration, properly assessed, and immediate action was taken (e.g., target testing was conducted).

IOC/ITA Recommendation no. 9:
Information relating to whistle-blower facilities, such as the ITA's recently established 'REVEAL' platform, was not publicized within the vicinity of the Doping Control Stations (DCS)s. The IO Team recommends increased awareness of whistle-blower platforms through provision of further information, such as posters and leaflets at DCSs. If athletes and athlete support personnel (ASP) were to opt in, SMS geofencing may allow for messages relative to anti-doping to be sent to those in the vicinity of the DCS. The athlete consent for this opt-in could be part of the athlete accreditation process.

LOC Recommendation no. 1:
Increase information to Doping Control Officers (DCOs) for the purpose of collection of intelligence. Interaction with the athletes and ASP by any person responsible for mitigating the risks posed from doping is minimal. One of the few opportunities is during the sample collection process. DCOs should be provided with an input on what actions they must take, should an individual wish to provide confidential information. This may be as simple as the DCO providing a leaflet providing information for whistle-blowers or it may necessitate some other immediate action, such as contacting a person trained to deal with sensitive information.

IOC/ITA Recommendation no. 10:
An individual trained and experienced in interacting with potential human intelligence sources and the subsequent handling of any information provided by such a person should be available. Ideally, this should be an appropriately trained investigator or intelligence professional. Initial interaction may occur via the telephone; however, such person should be available on the ground to meet with the individual at some point shortly following the initial interaction.

9.3 Intelligence Analysis Tool

The IO Team has no information to suggest that the ITA was unable to process information received either prior to or during the Games; however, it was noted that the Share Point platform was used to provide a basic intelligence support during the event.

IOC/ITA Recommendation no. 11:
Whilst the ITA implemented a number of new intelligence gathering initiatives and tools, the IO Team encourages the ITA to further develop an intelligence analysis program using more specialist software and critical thinking skills to maximize the value of the intel collected. This enhanced data could be used to improve test planning and target testing. It would also provide value to any reactive investigations carried out during the event.

10.0 Therapeutic Use Exemption Procedure

As part of the overall delegation of the Games' anti-doping program to the ITA, the IOC delegated the TUE management process during the Games to the ITA. The overall process was reliable and clearly explained on the ITA website. The IO Team did not ask the ITA to consult the medical files in detail or to discuss the reasoning behind TUE decisions but focused its attention on the administrative process in place.

The TUE Committee (TUEC) for the Games consisted of six experts selected by the ITA among the general pool of ITA TUE experts. These experts were based in Tokyo for the period of the Games even though the main communication channel among the experts and the ITA remained virtual, due to the restrictions imposed by the COVID-19 pandemic. The ITA systematically appointed a panel of four experts to revise a TUE case, using the other two experts as back-up in case of conflict of interest of any of the chosen panelists.

Two different processes were identified:

1) Recognition of TUEs approved by ADOs before the Games for athletes competing at the Games.

The recognition of pre-existing TUEs was not automatically granted. The ITA prepared a comprehensive list of existing TUEs from athletes competing in Tokyo, and the TUEC reviewed all of them, depending on whether the TUE was approved for chronic pathologies that required life treatments or not. Access to the diagnosis tab in ADAMS, and therefore more detailed scrutiny, was asked and obtained for a total of five TUEs. As a result of this exercise, the IO Team was informed that 96 TUEs were recognized and two TUEs were refused. The IO Team notes that in total, the TUEC reviewed a lower number of existing TUEs in comparison to previous Games.

2) Handling of TUEs submitted during the Games.

The ITA established a dedicated TUE office in the Polyclinic of the Olympic Village. This office was operational from 13 July 2021 to 8 August 2021, ten hours per day, and managed by two ITA staff members on site. All athletes competing at the Games who needed to apply for a TUE, had to prepare a complete file (TUE form properly filled in and accompanied by all necessary supporting medical information), with the support of their physician.

The athlete and/or the athlete's physician had the option to either bring the file to the ITA TUE office in the Polyclinic or submit a complete application in ADAMS, if the athlete or athlete's physician was familiar with that process.

In case the athlete and/or the athlete's physician delivered the TUE by hand to the TUE office, the ITA staff members scanned the medical file and recorded the TUE form and the medical documents

in ADAMS. The original documentation was not kept by the ITA and was returned to the athlete or their physician. For security reasons, the ITA did not accept applications sent by e-mail.

All TUEs submitted during the Games were classified as “emergency” TUEs and managed immediately (usually within 2-3 hours upon receipt) by the TUEC through ADAMS. Following successful implementation at the Lausanne 2020 Youth Olympic Games, a TUE helpline managed by ITA staff was also available to solve any issue or to give support to the athletes and/or the physicians at any time. This TUE helpline was active 24 hours a day, seven days a week.

This initiative was very well received not only by NOCs, but also by the local medical staff in the Polyclinic. The TUE office operated during the Games Period.

The ITA received a total of 23 new TUE requests during the Games. Among them, nine were not necessary because the substance was not prohibited.

Another task of the ITA TUE staff was to receive the TUE Enquiry Form from the laboratory when a Presumptive Adverse Analytical Finding was discovered for certain prohibited substances following analysis. It was up to the ITA staff to confirm if there was a valid TUE in place for an athlete or if the laboratory needed to perform a confirmation analysis.

Overall, the TUE program put in place for the Games was efficient and successful.

WADA Recommendation no.3:

In order to facilitate and secure the exchange between the laboratories, the ADOs or any other organization delegated by an ADO to manage TUEs on its behalf, it could be useful to create a TUE enquiry form in ADAMS, giving the possibility to fill in the information directly into the system.

IOC/ITA Recommendation no. 12:

The TUE experts worked efficiently in a virtual format. The ITA may therefore want to consider the benefits of having some or all TUE experts operate virtually (with minimal time zone differences) versus on site in the future, in order to potentially reduce resources.

11.0 Education and Interaction with Athletes and Athlete Support Personnel

11.1 Pre-Games period

WADA, in collaboration with the IOC, launched various online education programs ahead of the Games. These included courses available on the new Anti-Doping Education and Learning (ADEL) platform that were customized for different stakeholders ranging from athletes, coaches, to medical professionals. ‘*ADeL for Tokyo 2020 Olympics’* was developed by WADA in collaboration with the IOC and ITA to enable athletes and Athlete Support Personnel (ASP) to gain insights into the IOC ADR, procedures and requirements including how to apply for a TUE, provide whereabouts information, and explanations of the athletes’ rights and responsibilities during the testing process. Whilst *‘ADeL for Tokyo 2020 Olympics’* was only recommended for athletes and ASP, completion of the ‘*ADeL for Medical Professionals at Major Games’* course was a pre-requisite for team physicians who were scheduled to travel with teams to the Games. However, the course for team physicians was not strictly enforced.

In the lead-up to the Games, WADA additionally held regional webinars targeting athletes, ASP and medical personnel in a bid to highlight pertinent anti-doping issues relating to the Games. Whilst some athletes and ASP mentioned engaging in these as well as their own national anti-doping education programs, it was also evident that some athletes and ASP were still not well-informed about anti-doping. This highlights the need for the anti-doping community to continue increasing awareness and promoting these online resources. Furthermore, Major Event

Organizations can play a role in being the back stop as well as providing event-based education and awareness for those athletes and ASP that arrive to the Games with limited understanding of anti-doping. In parallel, the ITA also delivered an Olympian-led webinar series to highlight various aspects of the anti-doping program.

IOC/ITA/WADA Recommendation no. 1:
Monitoring and evaluation of online education programmes such as courses and webinars is warranted to better understand and optimize the access to, and utilization of, these resources.

IOC/ITA/IFs Recommendation no. 1:
To ensure athletes, athlete support personnel, medical professionals and all other relevant stakeholders are adequately educated prior to future Games, the IOC and the IFs could consider enforcing anti-doping education pre-requisites for participation in future Games. This has been implemented by certain IFs based on the doping risk of member National Federations.

11.2 Games period

Whilst the online pre-Games educational programs were a great addition, the IO Team notes that additional opportunities for anti-doping education during the Games period could not materialize, owing particularly to the circumstances, uncertainties and challenges presented by the COVID-19 pandemic. In all areas (i.e., the Athlete Villages, venues, Doping Control Stations, as well as during the sample collection process), distribution and sharing of educational materials such as brochures were avoided and contact time with athletes were kept to the bare minimum, with the aim to mitigate the transmission and spread of the COVID-19 infection.

The IO Team noted that some IFs (e.g., FINA) provided online anti-doping education, as evidenced by the posters at the aquatics venue that indicated the web links and QR codes for accessing such programs.

WADA was unable to deliver its trademark outreach program during the Games as the personal nature of athlete interaction and use of computer quizzes did not align with the COVID-19 protocols. Some athletes were aware of the WADA-branded towels being distributed at the Doping Control Stations of the Athlete Villages and asked where the WADA outreach booth was, as they anticipated that the towels could be obtained from the WADA booth. Following athletes' feedback, it is evident that the WADA outreach program is a popular activity that athletes consider as being part of the Games experience.

In the current context, the in-person engagement has been shifted to a stronger digital engagement.

The digital game PinQuest was the central tool to engage with athletes and athletes' entourage. It allowed to deliver key messages to approx. 10,000 athletes and ASP in a gamified manner during the Games. It covered topics such as anti-doping, prevention of competition manipulation, the Playbook or mental health.There were 45 specific questions on anti-doping, included in the digital game, and around 80% were answered correctly, which was higher than the average compared to other topics.

In addition, a dedicated wall was allocated to promote clean sport in the dining venue at the Olympic Village which was co-branded by both the ITA and WADA.

All athletes also received a pocket guide, as part of their welcome kit, in which a section was dedicated to the fight against doping with QR codes referring back to both the WADA ADEL platform and the ITA's reporting platform 'REVEAL'.

IOC/ITA/IFs/LOC Recommendation no. 1:
Available online resources should be further promoted throughout the Games period, as part of the events-based education implemented by the IOC. In the same light, the IOC and IFs could

explore how best to also utilize accredited venues and IF platforms to promote anti-doping education programs and online resources in future Games, as this opportunity was not exploited consistently or widely.

IOC/WADA Recommendation no. 1:
Ensure to maintain an on-site outreach program (including an outreach booth) at future Games.

11.3 During doping control

The sample collection process posters produced by JADA and distributed by the Local Organizing Committee were the only widely available educational material provided and displayed in the Doping Control Stations. This was reasonable considering the circumstances, as they did not need to be touched or shared. The posters were very colourful, utilized cartoon characters and used very simple language, albeit in English only, to explain the steps in the doping control process. Many Doping Control Stations placed posters strategically where they would easily be seen by athletes, e.g., on the wall directly facing the athletes' seating area in the processing room, the wall facing the sink in the toilet of the processing room, or next to the fridges and TVs in the waiting area of the Doping Control Station. However, the posters often were not noticed, and it was only on one occasion that a Doping Control Officer (DCO) was observed pointing and referring to the poster. The posters thus were unfortunately underutilized.

Although TVs were available in all Doping Control Stations, they tended to broadcast ongoing live events for the athletes and Athlete Support Personnel to watch as they waited, and it was also a tool for the Sample Collection Personnel to aid their work, e.g., to follow the proceedings of the day's events and time notifications or to identify athletes rather than for showing anti-doping education programs. However, during the OOC period in the Doping Control Station of the Olympic Village, an educational video was displayed with images similar to the posters mentioned above (in English only). The IO Team did not observe Sample Collection Personnel referring athletes to this video and considers this a missed opportunity.

The sample collection process itself is also a window for education that can be determined quickly by asking athletes if they are familiar with the process and, if not, guiding them through the doping control procedure. However, DCOs and Blood Collection Officers (BCOs) did not routinely ask or explain the procedure to the athletes. This could partly be attributed to the COVID-19 protocol (as contact time with athletes needed to be as limited as possible) and to the fact that Olympic-level athletes often tend to be familiar with the process. However, it was observed that the DCOs and BCOs did not explain the sample collection process to the athletes even when it was absolutely necessary to do so, e.g., when an athlete mentioned they had never been through the blood collection process and anticipated a step-by-step guide. It was also observed that local DCOs and BCOs were unable to adequately address athletes' questions when asked, mainly owing to language limitations. The Games being a global event where random testing is also conducted, it is important to consider those athletes who are less exposed and thus less familiar with the doping control process.

IOC/ LOC Recommendation no. 1:
The Doping Control Stations should have easy access to appropriate visual material/procedures to support the athlete through the sample collection and sealing process and have in place a process to be able to respond to athletes' procedural inquiries adequately. A possible strategy that could be adopted in future Games is to ascertain the athletes' familiarity with the doping control process upon arrival at the Doping Control Station and provide necessary resources in advance of the sample collection process. Further, QR codes could also be provided to athletes such that information and videos in preferred languages can be easily accessed and viewed by the athletes on their smartphones.

12.0 PWC Paperless Software (MODOC)

The ITA signed an agreement with the private sample collection organization Professional Worldwide Controls (PWC) to use their paperless software (MODOC) during the Games. MODOC was used by all Tokyo 2020 DCOs for OOC and IC testing. The only paper form used by Doping Control Chaperones (chaperones) and DCOs during the sample collection process was the IOC Notification Form when notifying athletes of their selection for doping control. The paperless system was only used within Doping Control Stations (DCSs).

Each DCO was assigned a tablet to record all the necessary information for each athlete they were responsible for processing. To avoid a system crash, each selected athlete was allocated to a DCO upon their arrival at the DCS (instead of all selected athletes being available to all DCOs' tablets). The DCO would fill in (either by using a stylus pen or by hand) the information of the sample collection process and would give the athlete the opportunity to confirm this information on a number of occasions during the session. The athlete had the opportunity to add their personal information, e.g., address, coach name and the medication taken in the last seven days, and record comments on the process. At the end of the process, the DCO would confirm with the athlete their preferred email address, at which the athlete would receive a password-protected copy of their electronic Doping Control Form (DCF). If the athlete had their phone with them, receipt of the DCF copy by the athlete could be confirmed instantly.

At the end of the process, the athlete would also be shown a QR Code that, if scanned with an Android phone, led to a table with the basic information (e.g., sample code number) of their test. However, if the athlete had an iOS phone, the QR Code was not functional. Therefore, the IO Team observed DCOs instructing athletes to only take a picture of the QR Code.

PWC had three IT representatives on site to solve any technical problems that might occur. The IO Team was made aware of an issue with the system being overloaded during the first days of the OOC testing period, but the issue was resolved swiftly and did not prevent samples from being collected as the system could work offline.

Overall, the feedback received from users (e.g., athletes, DCOs) on MODOC was positive. Advantages of a paperless system observed by the IO Team included:

a) the number of errors on DCFs are limited;
b) the possibility of analyzing swiftly the DCF data for statistical purposes;
c) the eco-friendliness of this solution for the environment and the anti-doping community; and
d) the absence of issues observed with the DCF carbon copies or sample collection equipment (e.g., sample code stickers) included in previous Games IO reports.

The IO Team also noted the following areas for improvement:

a) The average time an athlete spent during a sample collection session processed in MODOC was not less than the average time an athlete spends during a sample collection session recorded on a 'classic' paper DCF. One of the reasons was that the information from the paper IOC Notification Form had to be transferred (and therefore duplicated) into MODOC for each athlete.
b) There was a limited number of DCOs who, despite the training and practice tests conducted by PWC and TOCOG, were still not confident with MODOC and this caused some delays.

LOC Recommendation no. 2:
The IO Team notes a number of paperless software options in the anti-doping landscape. Whilst the IO Team fully supports the integration of IT (e.g., paperless software) in the sample collection process, it recommends testing the robustness of the system before each Major Event on site to ensure that high volume of data can be processed simultaneously by the IT system selected.

13.0 Sample Collection Personnel and Training

The IO Team would like to commend TOCOG and the ITA for their hard work in managing Sample Collection Personnel (SCP) despite a large number of last-minute cancellations from local and international SCP due to the COVID-19 restrictions in Japan or in their respective countries.

Based on previous IO Teams' recommendations, TOCOG recruited well-experienced international DCOs (IDCOs) to work with the local DCOs and BCOs. The combination of IDCOs and local DCOs allowed TOCOG to benefit from a highly experienced and diverse Doping Control team, which proved particularly important with regards to the diversity of languages spoken by athletes participating in the Games.

The final list of SCP present included the following roles and totaled 895 persons:

- 43 Doping Control Station Managers (25 international / 18 local)
- 42 Chaperone Coordinators (22 international / 20 local)
- 206 DCOs (86 international / 120 local)
- 43 BCOs (all local); and
- 561 Chaperones (all local)

The Canadian Centre for Ethics in Sport (CCES) and JADA assisted TOCOG with the recruitment, selection and training of IDCOs. Three hundred IDCO candidates were proposed by their respective NADOs. The candidates were required to have completed the IDCO training coordinated by the ITA and undertaken a further online examination developed and coordinated by CCES, with the objective to evaluate their knowledge of sample collection procedures, their reactions to unexpected scenarios, and their ability to understand, speak and write English.

The candidates who passed the examination were then invited to participate in a Games' specific training, which was supposed to be held in person upon their arrival in Tokyo. However, the COVID-19 pandemic caused changes to the format of the training. When the Games period started, a number of training sessions for local and IDCOs were held both virtually and in person in the Olympic Village, and the IO Team had the opportunity to attend several of them. On 22 June 2021, the IO Team also attended a "MODOC IDCO virtual session" conducted by PWC that focused on the use of MODOC.

Overall, the training sessions were well-organized, despite some technical difficulties when the trainees tried to log into MODOC.

The IO Team was invited to attend two more IDCO virtual sessions organized by the ITA and TOCOG, on 24-25 June 2021 and 12 July 2021 respectively, in which Japanese and English speaking DCOs were also invited. The first training session was comprehensive and covered all operational aspects of the sample collection process in addition to specific topics like overworking, stress, expected challenging venues, social distancing in Doping Control Stations and other issues. The training session was useful to the IDCOs. The two speakers for this training session (one from UK Anti-Doping and one from CCES) had extensive DCO and Doping Control Station Manager (DCSM) experience at Major Events and were very good at motivating the IDCOs to actively participate in the training.

The second training session was an IDCO live Q&A session attended by approximately 30 IDCOs. The training was focused on answering administrative questions related to the management of work shifts, the transportation system (i.e., public transportation, dedicated taxis and cars) and the IDCOs' remuneration. IDCOs who were DCSMs received 16,500 Yen (US$ 145) per shift, and IDCOs who worked as either Chaperone Coordinators or DCOs received 14,000 Yen (US$125) per shift, which was taxed at 20% for non-residents. The session finished with an additional MODOC practice session for the IDCOs who were not yet familiar with the system.

Throughout the Games, Sample Collection Personnel were managed and coordinated in a very effective way by combining teams of local DCOs, IDCOs and local BCOs. The use of local DCOs and BCOs was an important part of the legacy of these Games. The local DCOs and BCOs proved to be

very proficient and professional, and operated at very high standards. The opportunity to work at a Major Event of such a scale, and to work and interact with DCOs from other nations, will only help to further develop the standards and skills of local DCOs.

International Doping Control Officers (IDCOs) involved in the Games bring added value with their international expertise, knowledge, skills and abilities. This said, their accreditation status is somewhat different to other international experts at the Games as they directly fall under TOCOG and are therefore considered as 'local workforce'. In comparison, the International Technical Officials appointed by IFs are accredited under the IFs, which have a different status within the overall accreditation system. In practice, this meant that IDCOs did not have the same benefits as other international experts, resulting with them having to apply for a work visa on their own, accessing meals only during working hours, not having an accommodation guaranteed by TOCOG, not having access to dedicated transportation (and not being able to use the local transportation due to the COVID-19 protocols), and being subject to local taxation, etc.

In conclusion, the overall performance of Sample Collection Personnel was excellent, despite the shortage in numbers due to the COVID-19 pandemic, the very long workdays, the lack of rest days and of sufficient time for meals during shifts, and limited benefits available for IDCOs.

LOC Recommendation no. 3:
The LOC should ensure that its Doping Control Officers have sufficient exposure and practice with the paperless system used at the Games. For those who require further training, the LOC should plan further training sessions until the Doping Control Officers' familiarity with the system is at an acceptable level.

LOC Recommendation no. 4:
Whilst a reduced Sample Collection Personnel workforce still delivered the anti-doping program at a high level for the Tokyo Games, this came at the cost of significant overworking of many staff. Therefore, the final number of Sample Collection Personnel who worked at the Tokyo Games should not be used as a guide for future LOCs.

LOC Recommendation no. 5:
Sample Collection Personnel should have sufficient rest and meal breaks built into each shift. Pre-packaged or take-away meals should be provided to Sample Collection Personnel when it is not possible to eat due to logistical issues (e.g., eating areas not accessible or closed).

LOC Recommendation no. 6:
For future Games, IDCOs should be provided with an accreditation equivalent to the International Technical Officials. As reported in prior IO reports, IDCOs are a crucial component of the sample collection team at Olympic Games due to their experience, expertise, and cultural diversity.

14.0 Notification Process

The IO Team observed that, in general, athlete notifications were carried out in accordance with the provisions of the International Standard for Testing and Investigations (ISTI) and the Sport Specific Protocols developed by the ITA with the corresponding IF.

14.1 Sport Specific Protocols

The IO Team commends the work of the ITA with regards to the development of Sport Specific Protocols with the purpose of "clarifying the doping control procedures and other related operational and/or technical requirements that are applicable to each specific Sport/Discipline of the Summer Olympics". These Sport Specific Protocols included sections related to IC and OOC testing for the specific sport, intelligence sharing guidance, contact details of the person appointed by the IF as the operational contact, brief overview of the sport, and the Games competition schedule. However, the protocols provided to the IO Team did not always contain up-to-date information on the IF representatives' information or their local phone numbers.

In addition, specificities of each sport were included under a section called "Ways for Chaperones to identify the selected Athlete", with detailed illustrations and photographs showing the place where their National Olympic Committee emblem and/or nationality was located, and the location of their identification number on their uniform. This was really helpful to allow Sample Collection Personnel to become familiar with the sport and the different ways of identifying the athletes selected for doping control.

Other useful information found in the Sport Specific Protocols was the location of scoreboards used in each sport and instructions on how to review them for up-to-date rankings to assist Sample Collection Personnel in identifying selected athletes. Each protocol also included sport-specific permitted delays, chaperoning duties with descriptions of specific situations that could arise and what to do in these situations, as well as sport-specific scenarios such as how to deal with injured or disqualified athletes.

The Sport Specific Protocols also described where the notification of athletes should take place. However, at some venues, it was not obvious where the athletes were to be notified even with the information provided in advance. This was either because the flow from the field of play to the end of the mixed zone was not obvious, or the venue management did not allow for the plan provided in the Sport Specific Protocol to take place, or due to other Games-time decisions such as unexpected delays in the schedule. In addition, some venues did not allow chaperones to be positioned in a location that permitted them to observe the athletes and/or scoreboards at the end of competition to be aware of the selected athletes' location and to ensure the notification of the correct athletes. Following feedback from the IO Team, Chaperone Coordinators and ITA representatives present, changes were made to assist the chaperones knowing where exactly the notifications should take place in the venues when this was not in accordance with the Sport Specific Protocols.

IOC/ITA Recommendation no. 13:
Given the benefit of the detailed Sport Specific Protocols, these should continue to be put in place at future Games, and the IO Team recommends that they are revised and updated closer to the Games once the venue set-up and all operational details are confirmed.

14.2 Chaperones and Chaperone Coordinators

Chaperone Coordinators

Chaperone Coordinators were appointed for each venue and were responsible for the chaperones' briefing and debriefing, as well as the coordination of the athlete notification and chaperoning process. The Chaperone Coordinators were also responsible for briefing the chaperones on the location for notification and the athletes' exit route through the mixed zone and the press area. The IO Team observed that in some venues, the Chaperone Coordinator had previous experience in the sport, which proved useful for the notification process, specifically in sports with a high number of athletes selected for doping control.

Chaperones

There was a sufficient number of chaperones recruited for doping control who had a very good attitude to carry out their work. Briefing sessions involving the Doping Control Station Manager, the Chaperone Coordinators and the chaperones took place at the beginning of each testing session and were observed by the IO Team. Such briefings were focused on the notification process, i.e., where and when to notify an athlete since the process was different from one venue to another. As already mentioned, it was also observed that, if necessary, the location of notification was revised and adapted to the circumstances by the ITA representative present and the Chaperone Coordinator.

The chaperones were constantly in contact with their Chaperone Coordinators via a two-way radio and provided live updates on the progress of their missions through radio calls. In situations where the notifications were not done in accordance with the Chaperone Coordinator's instructions or the Sport Specific Protocols, the IO Team witnessed the Doping Control Station Manager and/or the Chaperone Coordinator asking the chaperones to amend the process for the next notification.

The Chaperone Coordinators and chaperones should be commended for taking significant steps in identifying the athlete selected for testing. This was warranted in these Games as it happened that some events had athletes who were identical twins or same-gender athletes from the same country with the same surname. Some Doping Control Station Managers and Chaperone Coordinators also included athlete profiles with pictures in the chaperone clipboards. It was a common observation that chaperones followed live events on the TV located in the Doping Control Station to become familiar with the athletes and to time their departure to undertake notification of the athletes.

In venues like the athletics venue where this was not possible, the Chaperone Coordinators had a picture of the athlete on their own tablet prior to notification. While this was not sufficient to confirm identity, the chaperones highlighted the usefulness of these pictures in identifying features beyond the names and countries, such as facial characteristics and hairstyle that would assist in identifying an athlete. Ultimately, the identity of the athletes was checked on all observed occasions against their accreditation cards. The Doping Control Officers and chaperones always identified themselves verbally, but also often supported their verbal introduction with their accreditations as well as the orange armbands worn by Sample Collection Personnel during the Games.

Despite the willingness of the chaperones and the relevant training, the IO Team observed that on several occasions, the limitations due to language differences and lack of experience meant that some notifications took longer and did not flow smoothly. However, this did not prevent any selected athletes from being notified based on the absence of refusals reports.

While filling in notification forms beforehand saves time and avoids mistakes, it could be noted that not all information can be pre-recorded. For example, the 'selection' box, which specifies the criteria for who is being selected for testing (e.g., random or by ranking) on the paper IOC Notification Form, was often left blank or filled in at the last minute. The IO Team noted a number of inconsistencies across venues in how this 'selection' box was recorded and is of the opinion that this information brings little value to the process.

LOC Recommendation no. 7:
Ensure that chaperones can observe the selected athletes from the end of the competition and exiting the field of play, they should have an overall view of the field of play and the entire path followed by the athletes through the mixed zone. This was not always the case in some venues.

LOC Recommendation no. 8:
It is understandable that chaperones are selected from the pool of local volunteers of a non-English native speaking country. However, the aim should be to have as many chaperones speaking English as possible and, for those who have limited English language skills, to provide them with a multilingual and simple document to be used when notifying athletes.

IOC/ITA Recommendation no. 14:
The 'selection' box on the IOC Notification Form should be removed for future Games to avoid confusion and inconsistencies.

14.3 Notification in Team Sports

For the most part, athletes were notified with no advance notice. When this was not the case, as in some team events, the IF representatives requested information on selected athletes prior to the end of the competition. In field hockey, for example, this was observed shortly before the end

of the match, and the IF representative in turn informed the team representative after the match ended. The Chaperone Coordinators argued that this was helpful when chaperones were inexperienced or not assertive enough, as the team representative would quickly identify and call the selected athletes before they exited the field of play, and thereby provided assistance for smooth notification.

IOC/ITA Recommendation no. 15:
Whilst the contribution of a third party (e.g., an IF or a team representative) can be useful in order to identify the correct athletes in difficult notification environments, the selected athlete information should only be revealed to a third party in exceptional circumstances and not prior to the end of the competition to ensure no advance notice to selected athletes is maintained in accordance with the International Standard for Testing and Investigations (ISTI).

14.4 Chaperoning selected athletes

The IO Team did not observe any athletes refusing or failing to comply following a request to provide a sample for doping control and observed that athletes were correctly chaperoned at all times following notification. There were some instances where reporting to the Doping Control Station was delayed e.g., in field hockey, it took at least 40 minutes for selected athletes from both teams to report to the Doping Control Station. For this particular sport, this delay was attributed to the fact that athletes routinely take ice baths after matches, among other valid reasons as outlined in the ISTI.

The chaperones were able to confirm that, whilst it is allowed in some sports, selected athletes did not shower prior to reporting to the Doping Control Station. The ITA and the IOC discussed with the IO Team the absence of clear guidance in the ISTI on whether showers are a permitted activity for delay by athletes. The IO Team is of the opinion that showers are part of the post-competition routine in certain sports and not in others.

In some venues with only a few tests scheduled for the day, no chaperones were appointed by the Doping Control Command Center but instead a sufficient number of Doping Control Officers were designated to carry out the notifications of selected athletes. The IO Team considers that this was a good strategy, since the number of Doping Control Officers with fluency in English was higher than the chaperones, and their experience made the notification a more agile process. In addition, this allowed to reduce the number of people inside the Doping Control Station, favoring social distancing.

IOC/ITA Recommendation no. 16:
The IO Team recommends that a sport-specific policy, detailing when a shower is a permitted activity for delay, should be agreed between all the involved parties and included in the Sport Specific Protocols.

LOC Recommendation no. 9:
For events with a small number of scheduled tests, the strategy to appoint a sufficient number of Doping Control Officers to carry out notifications of athletes should apply wherever possible.

15.0 Sample Collection Process

Overall, samples were often processed in a timely manner and athletes exhibited confidence in the doping control program. It was also evident that all Doping Control Officers had been properly trained and had their manual on the Tokyo 2020 doping control procedures at hand, which mitigated any major deviations in the procedures observed by the IO Team.

15.1 Doping Control Stations

The Doping Control Stations were of various sizes. However, due to the COVID-19 protocols, some of them could not accommodate the mandatory social distancing requirements, especially

during peak testing times. One example was the rowing venue, where the waiting room was not proportionate to the number of processing rooms, while some other Doping Control Stations were of a small size such that you could hear any conversations going on in the Doping Control Station, including between processing rooms. Given the COVID-19 protocols, many Doping Control Station Managers deployed strategies to manage instances where a high number of athletes entered the Doping Control Station, which was highly commendable. This included asking chaperones to remain outside the Doping Control Station or in their dedicated waiting rooms when not required or using available desks and chairs to record initial information from athletes whilst they were waiting to provide a sample to reduce the time spent in the Doping Control Station.

The Doping Control Stations were largely not easily identifiable. Although Doping Control Stations had signage at the door/entrance, signage leading to the Doping Control Station within the venue was limited and it was often difficult to find the Doping Control Station without consulting volunteers or venue management. For example, at the aquatics, 3on3 basketball and climbing venues, Doping Control Stations directional signage was limited and even in the vicinity of the Doping Control Stations, barriers obscured the entrance and identification of the facility.

The IO Team observed formalities involving verification and recording of the athletes and their representatives upon arrival at the Doping Control Station. When the athletes and their representatives arrived at the Doping Control Station, they were required to 'check in' and record their personal details on a check-in type register. This was done to record the arrival time of the athlete and whether or not they had any representatives with them. They were also required to record their check-out time following their completion of the sample collection process. On this basis, the Doping Control Stations were secure, and access was controlled adequately by dedicated personnel.

Sealed drinks were available in all Doping Control Stations. However, it was observed that no information related to good practice to avoid dilute samples was provided to the athlete on entry to the Doping Control Station.

LOC Recommendation no. 10:
More Doping Control Station directional signage should be positioned in the most strategic points of the venue. This would assist Athlete Support Personnel to find the Doping Control Station easily in case they do not arrive at the same time as the athlete or if an athlete needs assistance.

LOC Recommendation no. 11:
The athletes should be advised to not hydrate excessively by the Sample Collection Personnel at the entrance of the Doping Control Station in order to avoid dilute samples from the athletes.

15.2 Sample Collection Session

Assessing an athletes' knowledge of the sample collection process before the actual collection starts is an integral component of the sample collection procedure by the Doping Control Officer. However, this was observed to be done on very few occasions. A considerable number of athletes mentioned being familiar with the process, but observations often showed that even the most experienced athletes would benefit from DCO guidance as there is always something new to learn about the process.

Sample volumes and specific gravity were verified appropriately. The IO Team observed the positive impact the revision of the specific gravity requirements[3] had in the sample collection process. In particular, 202 out of 235 (87%) of the athletes who provided a urine sample with specific gravity of either 1.003 or 1.004 were not requested to provide an additional sample due to the sufficient volume of their sample (150mL or above). In addition, for 46 athletes whose first

[3]Suitable Specific Gravity for Analysis: For samples with a minimum volume of 90mL and less than 150mL, specific gravity measured at 1.005 or higher with a refractometer, or 1.010 or higher with lab sticks. For samples with a volume of 150mL and above, specific gravity measured at 1.003 or higher with a refractometer only.

urine sample did not meet the requirements of a suitable specific gravity for analysis, only seven (15%) were required to provide more than two additional samples.

Partial samples were in general processed and stored appropriately. Following sealing, partial samples were handed over to the Doping Control Station Manager for storage in a secure location in the Doping Control Station. Some Doping Control Stations were provided with fridges with a lock. When this was not the case, the room in the Doping Control Station where the fridge was located, was locked at all times.

During the initial phase of the Games, the IO Team observed some minor deviations from the International Standard for Testing and Investigations during the sample collection process, which did not impact the validity of a test. For instance, in some cases, the “A” bottle was filled with urine before the “B” bottle, or the “B” sample was filled beyond the maximum level indicated on the bottle. In some other cases, tens of milliliters of sample were left in the collection vessel and not sealed in the “A” and “B” bottles even though there was sufficient space in the bottles.

Whilst athletes should be asked about blood transfusions occurring in the last three months during a blood sample collection, in some cases, Doping Control Officers asked for this information also during a urine sample collection. Doping Control Officers were also observed asking athletes to declare not only medications and supplements taken within the previous seven days, but requesting as well the dosage, and further related details, which were recorded on the Doping Control Form.

All these minor issues were reported back to the ITA and TOCOG and were addressed in a timely fashion.

Sample codes were recorded in MODOC correctly, and any errors were mitigated by scanning the barcode of the sample collection equipment rather than making manual entries. However, the Doping Control Officers often passed the tablet to the athlete to input personal information such as the coach/doctor names, physical address, email and medications/supplement use, themselves. It could not be verified if the athletes or representatives carefully read and accurately provided the requested information. Even when the Doping Control Officers read out the requested information to the athletes, they did not read them in its entirety e.g., for the case of medications, the Doping Control Officers did not consistently mention that it was medication or supplements taken within the last seven days.

In relation to blood collection, it was observed that guidance and explanations from Doping Control Officers and Blood Collection Officers to athletes would have been particularly helpful because some athletes may have had limited exposure to the blood collection process. Fewer blood than urine samples are collected globally both in- and out-of-competition, and some countries may have blood collection limitations. On one occasion, an athlete did mention that it was the first time they were providing a blood sample for testing and they expected step-by-step guidance from the Doping Control Officer and/or the Blood Collection Officer but unfortunately neither offered guidance on the process. It was later discovered that there were no clear guidelines around who would guide the athlete, as the Doping Control Officers expected the Blood Collection Officer to provide the information to the athlete and vice versa. Considering that the Blood Collection Officers were from Japan and tended to have lower proficiency in English, having a written procedure in place would have ensured this was offered.

Further to this, some Blood Collection Officers, instead of going through the check list of requirements with the athlete prior to collecting a sample, just gave the athlete the checklist to read on their own. The Blood Collection Officers did not offer any advice on care for the venepuncture site after the sample collection process e.g., when to remove the plaster. In this light, while the equipment used and procedures were appropriate overall, a more engaging and participatory approach could have been used by the Blood Collection Officers and the Doping Control Officers involved in blood collection.

Whilst there were opportunities to provide feedback on the process, it was evident that most Doping Control Officers and athletes did not record any. Some athletes and Athlete Support Personnel provided feedback directly to the IO Team, in particular with regards to MODOC, but it seemed that athletes and Athlete Support Personnel did not want to provide such feedback in the presence of the Doping Control Officer and/or the Blood Collection Officer.

LOC Recommendation no. 12:
Whilst the majority of athletes who enter a Doping Control Station at the Games will probably have some level of experience in doping control, the LOC needs to put in place a process to ensure that all selected athletes are at least asked by the Doping Control Officer if they have been tested before or if they would like the Doping Control Officer to explain the process in detail before the start of the sample collection session.

LOC Recommendation no. 13:
Ensure that Blood Collection Officers or Doping Control Officers have the capability to inform the athlete about all the steps of the blood collection process by having appropriate information material that shows clearly what is going to happen. This information material could be provided to the athlete when they check in to the Doping Control Station if they are scheduled to have a blood sample taken. In addition, it is important to determine who should be responsible for providing this information to the athlete.

IOC/ITA Recommendation no. 17:
Beyond the comments section of the Doping Control Form, other opportunities for athletes to provide feedback on each individual sample collection process should be considered. One such opportunity could be to include a link in the email containing the athletes' copy of the Doping Control Form, which the athletes could complete in their own time and not in the presence of the Doping Control Officer and/or the Blood Collection Officer.

15.3 Storage of Samples

The IO Team did not observe the use of temperature data loggers during the blood collection process. These were managed by the Doping Control Station Managers once the blood samples were handed over to them by the Doping Control Officer at the end of each sample collection session. The blood and urine samples were stored in a secure location in the Doping Control Stations.

16.0 Sample Transport and Receipt of Samples by the Laboratory

A secure system of sample transportation from Doping Control Stations to the laboratory was implemented, including dedicated courier vans with two designated drivers. However, as in previous Games, the transfer of samples from the Doping Control Station to the laboratory could not be witnessed by the IO Team as only the two designated drivers could go into the small courier van, and the IO Team would have had to follow the sample van in their own designated car. This was difficult to coordinate because the car time allocated for the IO member was limited to a specific period, and the selected sample collection session extended beyond the time planned due to an athlete not being able to provide a urine sample of suitable volume. Therefore, the session (including completing the chain of custody documentation and loading the samples for transportation) could not always be observed.

As explained earlier in this report, MODOC was in place for the Games, which required the ITA to send a .csv file with a "box ID" to the laboratory after each sample collection session, linking the sample information in the file to the arriving sample delivery boxes.

Besides MODOC and ADCom, the ITA also established a secure system of communication with the laboratory (ITA-Lab SharePoint). A SharePoint notification was sent each time a .csv file was available to download by the laboratory. This system generally worked very well and allowed the laboratory to follow up and prepare for samples expected for analysis. However, there was some initial delay with

the input of Doping Control Form information in ADAMS (which did not allow for initial matching of laboratory test results to individual athletes) during the first days of operation – a point that the ITA worked on and resolved swiftly.

The IO Team observed the process of sample reception at the laboratory. The process included the checking of accreditations (drivers and car) by the security staff positioned at the entrance gate of the laboratory, who subsequently gave the van access to the adjacent laboratory interior parking space.

One of the couriers would bring the sample boxes into the laboratory facility (always accompanied by a laboratory staff member) for delivery and registration into the Laboratory Information Management System (LIMS). A designated laboratory staff member recorded in LIMS the samples' laboratory internal chain of custody, including sample registration, aliquoting, and storage. The laboratory implemented a process of double-checking the sample internal codes by e-reading the bar codes placed on bottles during registration. After sample aliquoting, laboratory technicians sequentially checked the labelled falcon tubes and specific procedure aliquot tubes bye-reading the codes, with the computer giving an error message if the codes did not match. Two people were in charge of the procedure for double-checking.

17.0 Tokyo Laboratory Activities

17.1 General

WADA's International Standard for Laboratories (ISL) recommends that Major Event Organizations (MEOs) give preference to the use of the existing facilities of a WADA-accredited laboratory for the analysis of samples, instead of establishing a new satellite laboratory for this purpose. However, laboratory operations necessary for a Major Event, such as the Games, may be such that the existing laboratory's analytical and sample handling capacity are not adequate. This may require the expansion of existing facilities, relocation of the laboratory to a new permanent facility, the addition of personnel, and/or the acquisition of additional equipment.

Thus, for the Games, with the support of JADA and TOCOG, the existing WADA-accredited laboratory at the LSI Medience Corporation, Tokyo was translocated, several months before the start of the Games, to a brand new, state-of-the-art laboratory, which complied with all the requirements of the ISO/IEC 17025 and ISL standards. This new laboratory possessed the latest equipment capable of analyzing and detecting prohibited substances and methods based on WADA's 2021 List of Prohibited Substances and Methods. Importantly, the laboratory will remain in this facility for future operations (after some downsizing), keeping most of its new instrumentation, which represents an important legacy of the Games.

The WADA-accredited Tokyo laboratory operated 24 hours a day, seven days a week, to analyze athlete samples and safeguard the integrity of the Games. COVID-19 restrictions made the high-quality operations performed by the laboratory, including the application, for the first time, of gene doping testing at an Olympic Games, even more remarkable.

WADA laboratory experts (teams composed of WADA Science staff and external experts, members of the WADA Laboratory Expert Advisory Group (Lab EAG) and/or technical working groups) made several visits to the laboratory in the lead-up to the Games. Specifically, in November 2019, WADA conducted a technical assessment of the laboratory's Games preparation, which was followed by a visit of WADA's Lab EAG, which held a meeting in Tokyo.

In June 2021, WADA carried out a second technical inspection to ensure that the laboratory was operating in compliance with the 2021 ISL and its related Technical Documents and Technical Letters.

During Games time, the local laboratory staff of approximately 130 (including local university student volunteers trained for sample reception, aliquoting and initial sample preparation procedures) analyzed far more samples over a short period of time than is typical for a WADA-

accredited laboratory. They were supported by 36 scientific experts from around the globe, who had a deep understanding of anti-doping and the unique set of analytical and operational challenges facing a laboratory during the Games. The presence of these international experts at the laboratory during the Games, in the middle of the restrictions and limitations imposed by the sanitary measures put in place to counteract the COVID-19 pandemic (e.g., living in a hotel to lab bubble, without access to the city or to the Games venues), deserves to be commended. It demonstrates the tremendous collaborative spirit within the anti-doping laboratory community.

17.2 Sample Storage

"A" (urine) samples were immediately processed, whereas "B" samples were stored at -20 °C until analysis, if needed. "A" and "B" blood samples collected in blood serum tubes samples were immediately centrifuged to obtain the serum fraction – the "A" sample was stored at 4 °C for a few hours until confirmation from the ITA confirmed which Growth Hormone (GH) test to perform on them: isoforms or biomarkers. The "B" serum samples, in turn, were initially placed at 4 °C and then gradually step-frozen to -20 °C until analysis, if required (no such "B" analysis was needed during the Games).

Sample storage freezers were located in a windowed, dedicated and secured room where access in and out of the room (both ways by means of key card and facial recognition) was restricted to a limited number of staff (no laboratory staff member was permitted to enter the cold room alone at any time; a minimum of two persons was required to access the sample storage room). There was a guard posted on permanent duty at the entrance of the cold room and that entrance was also monitored constantly by CCTV cameras. The guard was alerted if the staff did not use their biometric passes to get out of the sample storage room after 10 minutes.

The laboratory could readily report in the ITA-Lab SharePoint platform on any sample irregularities or provide recommendations for collection of follow-up samples if needed for targeting purposes.

A laboratory staff member provided feedback to the IO Team regarding SharePoint; namely, that it created extra work for laboratory staff and sometimes email was used as it was faster, but the staff still uploaded what was required in SharePoint afterwards. Although creating extra work and being sometimes confusing, the laboratory staff found SharePoint to be a useful and secure way of communicating with the ITA.

IOC/ITA Recommendation no. 18:
The SharePoint platform should be revised and improved taking into account feedback from laboratory staff. A simulation trial should be organized with the laboratory staff before future Games considering a worst-case scenario of overloading.

17.3 Sample Analysis

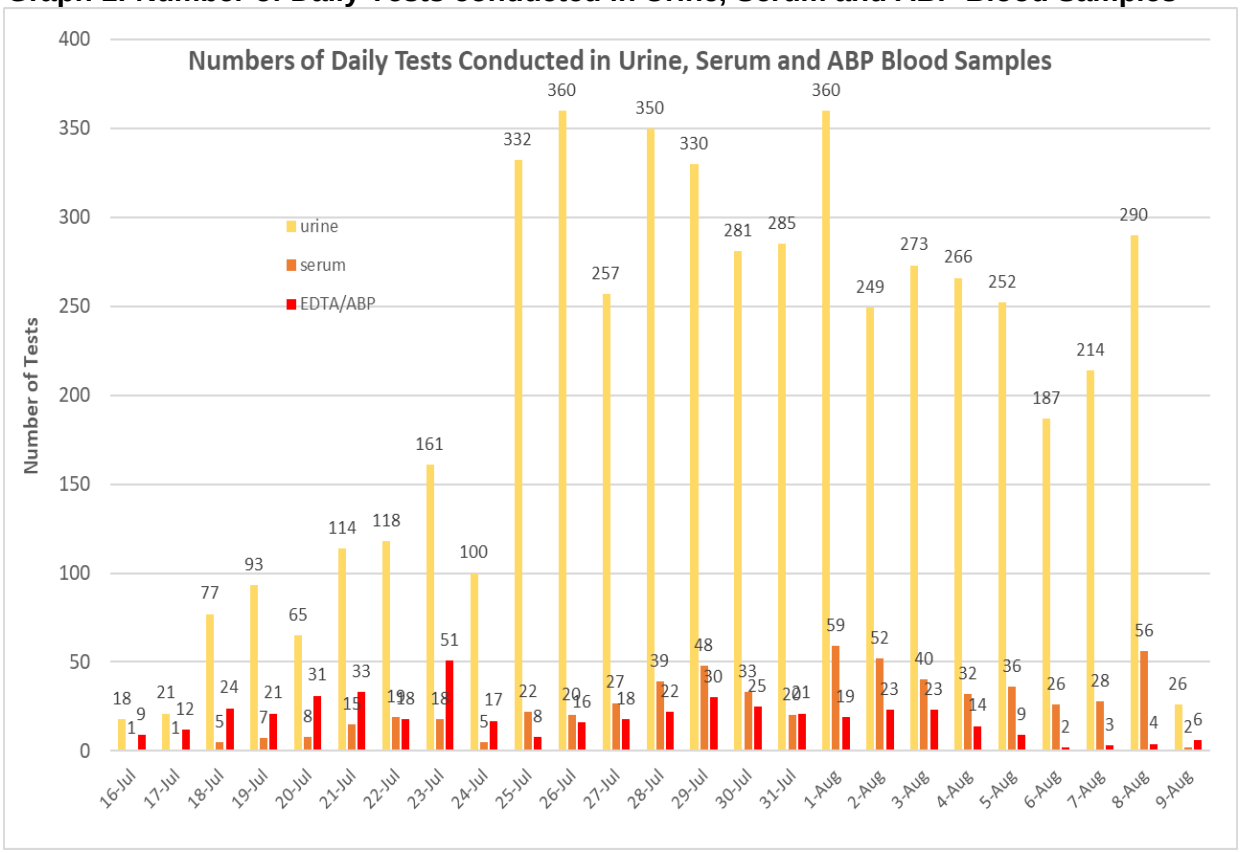
The Tokyo laboratory analyzed all urine samples for all substances on the standard sample analysis menu but also for small peptides e.g., Growth Hormone Releasing Peptides (GHRP), Growth Hormone Secretagogues (GHS) and Gonadotrophin Releasing Hormone (GnRH) and its synthetic analogues. Where requested by the ITA, it also analyzed urine samples for large peptides i.e., Growth Hormone Releasing Hormone (GHRH) and its analogues, Insulin-like Growth Factor-I (IGF-I) analogues, insulins and EPOs, and/or conducted Gas Chromatography / Combustion / Isotope Ratio Mass Spectrometry (GC/C/IRMS) analysis to confirm the origin of steroids found in the samples. The laboratory also had the capacity to analyze for Growth Hormone (GH) in serum (isoform test and biomarker test) and for EPOs in serum and plasma, as well as for Athlete's Biological Passport (ABP) markers, Haemoglobin-based Oxygen Carriers (HBOCs) and homologous blood transfusion (HBT). In addition, for the first time ever, the Tokyo laboratory applied a new method for detection of gene doping.

The Tokyo laboratory also analyzed blood samples for the presence of steroid esters following the spotting of collected venous blood onto dried blood spot (DBS) cards at the laboratory. Whilst

not being exactly a collection of capillary blood on DBS cards at the site of sample collection, as intended for the implementation of DBS collection procedures, this allowed the Tokyo laboratory to gain experience on method analytical performance when blood samples are extracted from spotted DBS cards, and analyzed for the presence of exogenous steroid esters. In the future, capillary blood samples will be directly obtained on DBS sample collection devices, which will make the process cheaper, faster and will increase the stability of analytes from sample collection to laboratory reception and analysis.

During the Games Period, the Tokyo laboratory received **5,079 urine samples** and **1,104 blood samples** (485 samples collected in Ethylenediaminetetraacetic acid (EDTA) tubes for ABP/ gene doping / HBT tests and 619 collected in serum tubes mainly for GH analysis).

Graph 1: Number of Daily Tests conducted in Urine, Serum and ABP Blood Samples



The number of urine and blood (EDTA/ABP or serum) samples received for analysis per day are represented in the graph above (**Graph 1**).

The analysis performed can be further split into the following:

Urine samples:

- 1,175 samples analyzed for EPOs (1,056 upon additional requests, 119 as further requests from APMUs or as follow-up tests);
- 218 IRMS analyses performed (133 initial requests, 85 follow-ups); and
- 64 samples analyzed for large peptides (GHRH, IGF-I analogs, insulins).

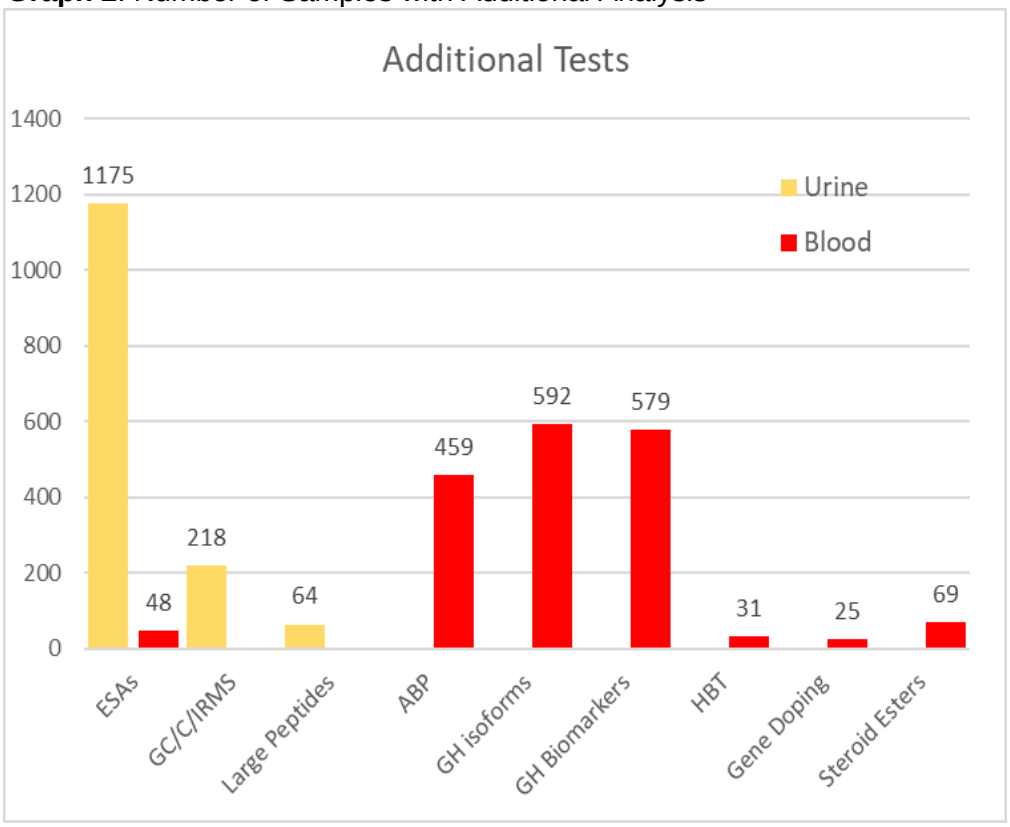
Blood samples:

- 619 serum samples analyzed for GH (592 GH isoforms, 579 biomarkers tests) and EPOs;
- 25 blood samples analyzed for gene doping;
- 69 analyses for steroid esters after spotting EDTA samples on DBS cards – no suspicious results triggering further IRMS analysis in urine;

- 48 blood samples analyzed for EPOs; and
- 31 analyses for HBT.

Below is a graph (**Graph 2**) outlining the number of samples that underwent additional analysis by the Tokyo laboratory for the various prohibited substances that are not normally screened in a standard urine analysis.

Graph 2: Number of Samples with Additional Analysis



17.4 Atypical Findings and Adverse Analytical Findings

The laboratory reported eight Atypical Findings (ATFs) (see **Table 1** below), which did not lead to AAFs, as well as eleven Adverse Analytical Findings (AAFs) (see **Table 2** below) for different substances, from samples collected during the Games period. There was also an ATF for EPO reported during the Games for a sample that had been collected OOC before the Games testing period. The laboratory was particularly active in requesting follow-up blood samples for EPO analysis in cases of suspicious urine results for recombinant EPO (recEPO).

Table 1-Atypical Findings (ATF)

	ATF
1	IRMS (steroids)
2	Clenbuterol < 5 ng/mL
3	Boldenone < 2 ng/mL[4]
4	IRMS (steroids)
5	Boldenone < 2 ng/mL[4]
6	Boldenone < 2 ng/mL
7	recEPO
8	19-NA in the presence of tetrahydronorethisterone (THNE) (female athlete)

[4] These two ATFs for boldenone were from two different samples collected from the same athlete.

Table 2: Adverse Analytical Findings (AAF)

	AAF
1	recEPO [5]
2	recEPO [5]
3	Triamcinolone acetonide + metabolite > 30 ng/mL
4	Methasterone
5	Terbutaline
6	DHCMT, tamoxifen, methandienone
7	Dexamethasone
8	HBT
9	Betamethasone
10	Ostarine, S-23
11	HBT

In addition, in accordance with ISL Article 5.3.6.2.2, the laboratory asked the ITA about the existence of approved TUEs before confirming Presumptive Adverse Analytical Findings (PAAF) for beta-2 agonists (terbutaline), stimulants (methylphenidate, amphetamine) and glucocorticoids (betamethasone, dexamethasone, triamcinolone acetonide). Feedback from the ITA was received immediately. This process led to the waving of confirmation analyses, and reporting of results as negative findings, for several findings associated with approved TUEs for the stimulants and, in one case, for terbutaline. However, another case of terbutaline, as well as the findings for glucocorticoids, were not associated with an approved TUE and were therefore confirmed and reported as AAFs.

The Tokyo laboratory put in place a process to ensure the accuracy of reported AAFs, which involved internal review of the analytical data by international experts and a few experienced directors from other WADA-accredited laboratories. In addition, the laboratory sought a mandatory, independent second opinion for recEPO findings from a member of the WADA EPO working group before reporting the AAFs.

At least three athletes were charged with an ADRV, and removed from the Games, for AAFs reported for samples that had been collected before the Games and analyzed in other WADA-accredited laboratories, but for which results could not be produced before the athletes travelled to Tokyo (due to restrictions and analysis backlogs associated with the COVID-19 pandemic).

ADOs Recommendation no. 2:
Ensure that, except in exceptional circumstances, all analyses on samples collected before the Games and belonging to athletes participating in the Games are completed before the athletes arrive or compete in the Games. ADOs should be reminded of the importance of this and ensure that they notify the laboratory to prioritize the analysis of samples for Games-bound athletes and that Doping Control Forms are entered as soon as possible into ADAMS so the status of any outstanding analysis for participating athletes can be closely monitored.

17.5 Double-blind External Quality Assessment Scheme (EQAS) Samples

As part of the monitoring of laboratory performance, and as an essential part of the quality control of laboratory processes during the Games, WADA, upon agreement with the ITA, sent six External Quality Assessment Scheme (EQAS) samples to Tokyo. The ITA introduced these samples into Testing Orders, with support from assigned Doping Control Officers, for analysis on a double-blind[6] basis by the laboratory. The laboratory did not know that these were WADA EQAS samples, assuming that these were normal doping control samples collected either in the OOC period (two samples) or after the competition started (four samples). The IO Team member located at the laboratory could observe the introduction of four of these samples at the Doping Control Station

[5] AAF for recEPO on matched urine/blood samples collected from the same athlete. This athlete had been targeted based on pre-Games intelligence information.
[6] A double-blind analysis means that the laboratory is not aware neither of the content of the sample nor that the sample is an EQAS sample, since it is collected by a Testing Authority (in this case, by the ITA acting on behalf of the IOC) and is indistinguishable from routine doping control samples

in the Olympic Village, which was carried out with no issues. The double-blind EQAS samples contained representative substances from different classes of prohibited substances, including steroids, peptide hormones and diuretics, and requiring the application of different analytical methods. The Tokyo laboratory correctly reported all the results of the EQAS samples, providing strong assurance that the laboratory was conducting its analyses in line with the mandatory requirements of the ISL.

17.6 "B" Sample Confirmation Procedures

The laboratory staff, especially the student volunteers trained for the initial steps of sample registration or aliquoting, had to adapt quickly to the high number of samples received for analysis. During the first few days, this process was slower than it would be normally, but this was rapidly overcome as the student volunteers acquired more hands-on experience. This was particularly important considering the challenging conditions of the COVID-19 pandemic in Japan, and the fact that athletes could remain in the country for just a few days following the completion of their competition – a quick turnaround of analytical results was needed to ensure that, had any athlete who returned an Adverse Analytical Finding and requested a "B" sample confirmation, the athlete or their representative could witness the "B" sample opening procedure. An alternative "virtual" "B" sample opening protocol was developed to address this situation, but it did not have to be applied during the Games. As it turned out, three "B" sample confirmations, for methasterone (a prohibited steroid), ostarine/S-23 (selective androgen receptor modulators) and homologous blood transfusion (a prohibited method) were performed during the Games. The athlete and a representative attended the procedure for the methasterone case, whereas the two other "B" sample openings were performed in the presence of an independent witness.

18.0 Results Management

18.1 General

The ITA handled results management for potential Anti-Doping Rule Violations (ADRVs) on behalf of the IOC in a quick and efficient manner. Once the Tokyo WADA-accredited laboratory reported an AAF, the ITA promptly conducted an initial review and shortly thereafter, notified the athlete, their National Olympic Committee (NOC) and National Anti-Doping Organization, WADA, and the IOC Legal Team.

The notification included all required information, and the ITA routinely requested confirmation of receipt from the Chef de Mission of the athlete's NOC.

The Court of Arbitration for Sport's Anti-Doping Division (CAS ADD) was appointed to hear all potential ADRV cases and selected a number of arbitrators who were present in Tokyo to sit as a panel of three when required. The ITA was also responsible for representing the IOC in front of the appointed CAS ADD panel.

All of the potential ADRVs that occurred during the Games were World Anti-Doping Code Article 2.1 presence cases (i.e., AAFs). For cases where a non-specified substance was involved, the athlete was notified via the notification of the AAF that they were provisionally suspended, and the ITA quickly filed an application to the CAS ADD in accordance with the IOC ADR.

18.2 Court of Arbitration for Sport's Anti-Doping Division

According to the CAS ADD's arbitration rules for the Tokyo 2020 Olympic Games, the CAS ADD was responsible for providing all notifications and communications from the CAS ADD to a number of parties, including WADA. For two of the three hearings to impose a provisional suspension that took place during the Games, the CAS ADD did not notify WADA of the hearings. For one of the hearings, the IO Team recognizes that time was of the essence considering the athlete was to compete the same day of notification. As a result, the CAS ADD decided to hold the hearing via telephone and there was arguably no time to set up a virtual call. However, the CAS ADD

proceeded to issue its decision without mentioning in the operative decision or notifying WADA that a hearing had indeed taken place. For the other hearing, WADA was notified by the ITA and, as a result, an IO Team member was able to attend.

In general, for the two virtual hearings where the IO Team was present, the technology was sufficient and both parties had fair opportunities to present their cases.

It was also observed that there was an insufficient level of anti-doping knowledge by some members of the CAS ADD, specifically their understanding of some provisions of the Code, the International Standard for Results Management, as well as CAS jurisprudence on strict liability, burden of proof, and responsibility of that burden. Some questions asked by panel members in at least one of the hearings highlighted this.

CAS ADD Recommendation no. 1:
For future Games, it is recommended that the CAS ADD routinely includes the WADA persons/emails copied in the ITA notifications to the CAS ADD, in all of the CAS ADD's notifications and communications in accordance with their arbitration rules. It is important that an IO Team member participates in hearings to ensure that the parties' procedural rights are maintained.

CAS ADD Recommendation no. 2:
For future Games, the IO Team recommends that the CAS ADD is comprised of members more familiar with the World Anti-Doping Code and anti-doping regulations or that the members have access to anti-doping training or education materials prior to the Games.

18.3 Provisional Suspensions

The IOC ADR require that a provisional suspension is "imposed by the CAS ADD promptly upon or review and notification…and the Athlete or other Person being given the opportunity to be heard…" In one case during the Games, the athlete did not challenge the provisional suspension. However, out of courtesy, the CAS ADD still set a hearing in case the athlete wanted to appear. The athlete did not appear, and the CAS ADD rendered its decision confirming the provisional suspension "imposed" by the IOC. In situations like the above, the confirmation by the CAS ADD creates an extra step for both the CAS ADD and the IOC/ITA. In any case where a provisional suspension is imposed, regardless if at the Games or not, an athlete or other person has the right to a provisional hearing or expedited hearing and can exercise this right upon request.

IOC/CAS ADD Recommendation no. 1:
The IO Team recommends that the requirement for the CAS ADD to impose a provisional suspension, rather than just the IOC on its own, be reconsidered to determine its necessity. [7]

19.0 Summary of IO Recommendations

RECOMMENDATIONS TO THE IOC/ITA:

IOC/ITA Recommendation no. 1:
The IOC/ITA could consider revising the Pre-Games Expert Group recommendations (increase/decrease the number to be fit for purpose) per athlete for IFs and NADOs in the period closer to (e.g., two months before) the Games to ensure they are proportionate and as accurate as possible.

IOC/ITA Recommendation no. 2:
The IOC/ITA should consider through its Pre-Games Expert Group the targeting of specific athletes as part of the team sport test recommendations provided to IFs and NADOs.

[7] The anti-doping rules for the Beijing 2022 Winter Games have addressed this recommendation independently of this report.

IOC/ITA Recommendation no. 3:
The IO Team recommends to the IOC to continue extending testing jurisdiction in advance of future Games to allow the ITA to coordinate tests on athletes who may have not been sufficiently tested in the build-up to future Games.

IOC/ITA Recommendation no. 4:
The IO Team encourages the IOC to continue to fund similar projects like the global long term-storage program for future Games.

IOC/ITA Recommendation no. 5:
Whilst the IO Team understands the limitations and impact the COVID-19 protocol had during the Games and the difficulties in coordinating testing outside of the Olympic venues during the Games Period, for future Games, the IOC/ITA should continue to put in place a testing program (with a contingency of tests) for athletes outside of Olympic venues and continue to enhance its coordination efforts with the local NADO and other ADOs.

IOC/ITA Recommendation no. 6:
The IO Team recommends that the ITA continues to collaborate with all IFs and NADOs to ensure that the ITA is promptly made aware of which athletes are included in an ADO's RTP.

IOC/ITA Recommendation no. 7:
The ITA, on behalf of IOC, should ensure that when making an attempt to notify an athlete included in an RTP during the OOC testing period, and during the athlete's chosen 60-minute timeslot, DCOs follow procedures that are in line with the International Standard for Testing and Investigations (ISTI). For example, once the DCO arrives at the location specified for the 60-minute timeslot, if the athlete cannot be located immediately, the DCO should remain at the location for whatever time is left of the 60-minute time slot. During this remaining time, the DCO should do what is reasonable in the circumstances to try and locate the athlete.

IOC/ITA Recommendation no. 8:
The IO Team recommends the formulation of an Intelligence Collection Plan (ICP) which would support the ITA's Intelligence Strategy and ensure that information collection is maximized through a well-structured and systematic process. ICPs are used by many law enforcement and intelligence services, to ensure there is a clear understanding of intelligence collection capabilities to enable appropriate tasking of all available resources, thus allowing them to gather and provide pertinent information within any given time limits.

IOC/ITA Recommendation no. 9:
Information relating to whistle-blower facilities, such as the ITA's recently established 'REVEAL' platform, was not publicized within the vicinity of the Doping Control Stations (DCS)s. The IO Team recommends increased awareness of whistle-blower platforms through provision of further information, such as posters and leaflets at DCSs. If athletes and athlete support personnel (ASP) were to opt in, SMS geofencing may allow for messages relative to anti-doping to be sent to those in the vicinity of the DCS. The athlete consent for this opt-in could be part of the athlete accreditation process.

IOC/ITA Recommendation no. 10:
An individual trained and experienced in interacting with potential human intelligence sources and the subsequent handling of any information provided by such a person should be available. Ideally, this should be an appropriately trained investigator or intelligence professional. Initial interaction may occur via the telephone; however, such person should be available on the ground to meet with the individual at some point shortly following the initial interaction.

IOC/ITA Recommendation no. 11:
Whilst the ITA implemented a number of new intelligence gathering initiatives and tools, the IO Team encourages the ITA to further develop an intelligence analysis program using more specialist software and critical thinking skills to maximize the value of the intel collected. This enhanced data could be

used to improve test planning and target testing. It would also provide value to any reactive investigations carried out during the event.

IOC/ITA Recommendation no. 12:
The TUE experts worked efficiently in a virtual format. The ITA may therefore want to consider the benefits of having some or all TUE experts operate virtually (with minimal time zone differences) versus on site in the future, in order to potentially reduce resources.

IOC/ITA Recommendation no. 13:
Given the high benefit of the detailed Sport Specific Protocols, these should continue to be put in place at future Games and the IO Team recommends that they are revised and updated once the venue set-up and all operational details are confirmed.

IOC/ITA Recommendation no. 14:
The 'selection' box on the IOC Notification Form should be removed for future Games to avoid confusion and inconsistencies.

IOC/ITA Recommendation no. 15:
Whilst the contribution of a third party (e.g., an IF or a team representative) can be useful in order to identify the correct athletes in difficult notification environments, the selected athlete information should only be revealed to a third party in exceptional circumstances and not prior to the end of the competition to ensure no advance notice to selected athletes is maintained in accordance with the International Standard for Testing and Investigations (ISTI).

IOC/ITA Recommendation no. 16:
The IO Team recommends that a sport-specific policy, detailing when a shower is a permitted activity for delay, should be agreed between all the involved parties and included in the Sport Specific Protocols.

IOC/ITA Recommendation no. 17:
Beyond the comments section of the Doping Control Form, other opportunities for athletes to provide feedback on each individual sample collection process should be considered. One such opportunity could be to include a link in the email containing the athletes' copy of the Doping Control Form, which the athletes could complete in their own time and not in the presence of the Doping Control Officer and/or the Blood Collection Officer.

IOC/ITA Recommendation no. 18:
The SharePoint platform should be revised and improved taking into account feedback from laboratory staff. A simulation trial should be organized with the laboratory staff before future Games considering a worst-case scenario of overloading.

RECOMMENDATIONS TO WADA:

WADA Recommendation no. 1:
WADA and its ADAMS Team should ensure that ADOs e.g., IOC/ITA that have jurisdiction over athletes who participate in future Games have easy access to RTP information to enable them to conduct an effective OOC testing program from the day such jurisdiction is in place.

WADA Recommendation no. 2:
WADA should explore a solution that would centralize the ABP evaluation process and better fit the need to quickly implement follow-up testing missions or additional analysis of collected samples. This could include the appointment of the APMU of the Olympic/Paralympic laboratory as the Games APMU with the support of a selected pool of experts working in other APMUs.

WADA Recommendation no. 3:
In order to facilitate and secure the exchange between the laboratories, the ADOs or any other organization delegated by an ADO to manage TUEs on its behalf, it could be useful to create a TUE enquiry form in ADAMS, giving the possibility to fill in the information directly into the system.

RECOMMENDATIONS TO THE LOC:

LOC Recommendation no. 1:
Increase information to Doping Control Officers (DCOs) for the purpose of collection of intelligence. Interaction with the athletes and ASP by any person responsible for mitigating the risks posed from doping is minimal. One of the few opportunities is during the sample collection process. DCOs should be provided with an input on what actions they must take, should an individual wish to provide confidential information. This may be as simple as the DCO providing a leaflet providing information for whistle-blowers or it may necessitate some other immediate action, such as contacting a person trained to deal with sensitive information.

LOC Recommendation no. 2:
The IO Team notes a number of paperless software options in the anti-doping landscape. Whilst the IO Team fully supports the integration of IT (e.g., paperless software) in the sample collection process, it recommends testing the robustness of the system before each Major Event on site to ensure that high volume of data can be processed simultaneously by the IT system selected.

LOC Recommendation no. 3:
The LOC should ensure that its Doping Control Officers have sufficient exposure and practice with the paperless system used at the Games. For those who require further training, the LOC should plan further training sessions until the Doping Control Officers' familiarity with the system is at an acceptable level.

LOC Recommendation no. 4:
Whilst a reduced Sample Collection Personnel workforce still delivered the anti-doping program at a high level for the Tokyo Games, this came at the cost of significant overworking of many staff. Therefore, the final number of Sample Collection Personnel who worked at the Tokyo Games should not be used as a guide for future LOCs.

LOC Recommendation no. 5:
Sample Collection Personnel It should have sufficient rest and meal breaks built into each shift. Pre-packaged or take-away meals should be provided to Sample Collection Personnel when it is not possible to eat due to logistical issues (e.g., eating areas not accessible or closed).

LOC Recommendation no. 6:
For future Games, IDCOs should be provided with an accreditation equivalent to the International Technical Officials. As reported in prior IO reports, IDCOs are a crucial component of the sample collection team at Olympic Games due to their experience, expertise, and cultural diversity.

LOC Recommendation no. 7:
Ensure that chaperones can observe the selected athletes from the end of the competition and exiting the field of play, they should have an overall view of the field of play and the entire path followed by the athletes through the mixed zone. This was not always the case in some venues.

LOC Recommendation no. 8:
It is understandable that chaperones are selected from the pool of local volunteers of a non-English native speaking country. However, the aim should be to have as many chaperones speaking English as possible and, for those who have limited English language skills, to provide them with a multilingual and simple document to be used when notifying athletes.

LOC Recommendation no. 9:
For events with a small number of scheduled tests, the strategy to appoint a sufficient number of Doping Control Officers to carry out notifications of athletes should apply wherever possible.

LOC Recommendation no. 10:
More Doping Control Station directional signage should be positioned in the most strategic points of the venue. This would assist Athlete Support Personnel to find the Doping Control Station easily in case they do not arrive at the same time as the athlete or if an athlete needs assistance.

LOC Recommendation no. 11:
The athletes should be advised to not hydrate excessively by the Sample Collection Personnel at the entrance of the Doping Control Station in order to avoid dilute samples from the athletes.

LOC Recommendation no. 12:
Whilst the majority of athletes who enter a Doping Control Station at the Games will probably have some level of experience in doping control, the LOC needs to put in place a process to ensure that all selected athletes are at least asked by the Doping Control Officer if they have been tested before or if they would like the Doping Control Officer to explain the process in detail before the start of the sample collection session.

LOC Recommendation no. 13:
Ensure that Blood Collection Officers or Doping Control Officers have the capability to inform the athlete about all the steps of the blood collection process by having appropriate information material that shows clearly what is going to happen. This information material could be provided to the athlete when they check in to the Doping Control Station if they are scheduled to have a blood sample taken. In addition, it is important to determine who should be responsible for providing this information to the athlete.

RECOMMENDATION TO THE IOC, ITA AND WADA:

IOC/ITA/WADA Recommendation no. 1:
Monitoring and evaluation of online education programmes such as courses and webinars is warranted to better understand and optimize the access to, and utilization of, these resources.

RECOMMENDATION TO THE IOC, ITA AND IFs:

IOC/ITA/IFs Recommendation no. 1:
Ensure athletes, Athlete Support Personnel, medical professionals and all other relevant stakeholders are adequately educated prior to future Games, the IOC and the IFs could consider enforcing anti-doping education pre-requisites for participation in future Games. This has been implemented by certain IFs based on the doping risk of member National Federations.

RECOMMENDATION TO THE IOC, ITA, IFs AND THE LOC:

IOC/ITA/IFs/LOC Recommendation no. 1:
Available online resources should be further promoted throughout the Games period, as part of the events-based education implemented by the IOC. In the same light, the IOC and IFs could explore how best to also utilize accredited venues and IF platforms to promote anti-doping education programs and online resources in future Games, as this opportunity was not exploited consistently or widely.

RECOMMENDATION TO THE IOC AND THE LOC:

IOC/ LOC Recommendation no. 1:
The Doping Control Stations should have easy access to appropriate visual material/procedures to support the athlete through the sample collection and sealing process and have in place a process to be able to respond to athletes' procedural inquiries adequately. A possible strategy that could be

adopted in future Games is to ascertain the athletes' familiarity with the doping control process upon arrival at the Doping Control Station and provide necessary resources in advance of the sample collection process. Further, QR codes could also be provided to athletes such that information and videos in preferred languages can be easily accessed and viewed by the athletes on their smartphones.

RECOMMENDATION TO THE IOC AND WADA:

IOC/WADA Recommendation no. 1:
Ensure to maintain an on-site outreach program (including an outreach booth) at future Games.

RECOMMENDATIONS TO ALL ADOS:

ADOs Recommendation no. 1:
The IO Team encourages all ADOs to make use of the global long term-storage program in the future and store samples collected from athletes who will participate in future Olympic Games at the CLTSF or at a WADA-accredited laboratory for potential further analysis within the ten-year statute of limitation period under the Code.

ADOs Recommendation no. 2:
Ensure that, except in exceptional circumstances, all analyses on samples collected before the Games and belonging to athletes participating in the Games are completed before the athletes arrive or compete in the Games. ADOs should be reminded of the importance of this and ensure that they notify the laboratory to prioritize the analysis of samples for Games-bound athletes and that Doping Control Forms are entered as soon as possible into ADAMS so the status of any outstanding analysis for participating athletes can be closely monitored.

RECOMMENDATIONS TO CAS ADD:

CAS ADD Recommendation no. 1:
For future Games, it is recommended that the CAS ADD routinely includes the WADA persons/emails copied in the ITA notifications to the CAS ADD, in all of the CAS ADD's notifications and communications in accordance with their arbitration rules. It is important that an IO Team member participates in hearings to ensure that the parties' procedural rights are maintained.

CAS ADD Recommendation no. 2:
For future Games, the IO Team recommends that the CAS ADD is comprised of members more familiar with the World Anti-Doping Code and anti-doping regulations or that the members have access to anti-doping training or education materials prior to the Games.

RECOMMENDATION TO THE IOC AND THE CAS ADD:

IOC/CAS ADD Recommendation no. 1:
The IO Team recommends that the requirement for the CAS ADD to impose a provisional suspension, rather than just the IOC on its own, be reconsidered to determine its necessity.

20.0 Sample Collection Figures

Number of Athletes Tested during the Games Period (13 July 2021 – 8 August 2021)

Number of Athletes Tested (as reported in ADAMS)	Number	% of the 11,658 Athletes Participating
Athletes Tested (once)	2,724	23.4%
Athletes Tested (more than once)	1,401	12.0%
Total Number Athletes Tested	**4,125**	**35.4%**

Type of Analyses by Sport/Discipline[8]

Sport/Discipline	Urine			Blood			ABP Blood			Grand Total
	IC	OOC	Total	IC	OOC	Total	IC	OOC	Total	
Aquatics	**467**	**198**	**665**	**35**	**39**	**74**		**65**	**65**	**804**
Artistic Swimming	8		8							8
Diving	32	3	35	1		1				36
Open Water	20	11	31	1	1	2		7	7	40
Swimming Long Distance 800m or greater	21	21	42	1	7	8		12	12	62
Swimming Middle Distance 200-400m	156	70	226	6	16	22		36	36	284
Swimming Sprint 100m or less	178	67	245	22	15	37		10	10	292
Water Polo	52	26	78	4		4				82
Archery	**23**	**4**	**27**					**1**	**1**	**28**
Athletics	**577**	**418**	**995**	**98**	**109**	**207**	**7**	**131**	**138**	**1,340**
Combined Events	20	14	34	6	5	11		4	4	49
Jumps	81	59	140	20	11	31		2	2	173
Long Distance 3,000m or greater	137	146	283	19	39	58	7	96	103	444
Middle Distance 800-1,500m	55	42	97	3	11	14		20	20	131
Sprint 400m or less	200	101	301	32	26	58		9	9	368
Throws	84	56	140	18	17	35				175
Badminton	**35**	**21**	**56**	**4**	**2**	**6**				**62**
Baseball	**55**	**36**	**91**	**8**	**6**	**14**				**105**
Basketball	**75**	**44**	**119**	**10**	**9**	**19**				**138**
3 on 3	29	6	35	2		2				37
Basketball	46	38	84	8	9	17				101
Boxing	**129**	**69**	**198**	**9**	**18**	**27**		**28**	**28**	**253**
Canoe/Kayak	**165**	**62**	**227**	**14**	**16**	**30**	**1**	**25**	**26**	**283**
Canoe Slalom	40	27	67	3	6	9		12	12	88
Long Distance 1,000m	40	13	53	4	2	6		7	7	66
Middle Distance 500m	51	12	63	4	4	8	1	6	7	78
Sprint 200m	34	10	44	3	4	7				51
Cycling	**245**	**124**	**369**	**26**	**31**	**57**		**67**	**67**	**493**
BMX	28	10	38	2	4	6		1	1	45
Mountain Bike - Cross Country	24	35	59	1	4	5		17	17	81
Road	48	37	85	4	9	13		30	30	128
Track Endurance	75	20	95	7	7	14		16	16	125
Track Sprint	70	22	92	12	7	19		3	3	114
Equestrian	**26**	**7**	**33**							**33**

[8] Data attributed to the IOC (as the Testing Authority) as recorded in ADAMS.

Type of Analyses by Sport/Discipline[8]

Sport/Discipline	Urine			Blood			ABP Blood			Grand Total
	IC	OOC	Total	IC	OOC	Total	IC	OOC	Total	
Dressage	9	2	11							11
Eventing	9	4	13							13
Jumping	8	1	9							9
Fencing	**49**	**10**	**59**	**2**	**2**	**4**				**63**
Epee	16	5	21		1	1				22
Foil	16	3	19	1		1				20
Sabre	17	2	19	1	1	2				21
Field Hockey	**84**	**42**	**126**	**7**	**6**	**13**				**139**
Football	**86**	**58**	**144**	**7**	**1**	**8**				**152**
Golf	**15**	**7**	**22**							**22**
Gymnastics	**116**	**36**	**152**	**8**	**4**	**12**		**1**	**1**	**165**
Artistic	100	19	119	8	3	11		1	1	131
Rhythmic	8	14	22							22
Trampoline	8	3	11		1	1				12
Handball - Indoor	**57**	**50**	**107**	**5**	**8**	**13**				**120**
Judo	**105**	**51**	**156**	**8**	**3**	**11**				**167**
Karate	**57**	**22**	**79**	**3**	**5**	**8**				**87**
Modern Pentathlon	**14**	**14**	**28**	**1**	**5**	**6**	**2**		**2**	**36**
Roller Sports - Skateboarding	**16**	**12**	**28**	**1**	**2**	**3**				**31**
Rowing	**145**	**105**	**250**	**15**	**44**	**59**		**91**	**91**	**400**
Rugby Union - Sevens	**81**	**54**	**135**	**13**	**20**	**33**				**168**
Sailing	**41**	**29**	**70**	**2**	**1**	**3**				**73**
Shooting	**60**	**23**	**83**							**83**
Softball	**36**	**9**	**45**	**2**		**2**		**1**	**1**	**48**
Sport Climbing - Combined	**14**	**10**	**24**		**3**	**3**				**27**
Surfing	**19**	**4**	**23**							**23**
Table Tennis	**20**	**9**	**29**	**1**	**1**	**2**				**31**
Taekwondo - Sparring	**59**	**31**	**90**	**2**	**1**	**3**		**3**	**3**	**96**
Tennis	**46**	**4**	**50**	**2**		**2**				**52**
Triathlon	**36**	**42**	**78**	**4**	**6**	**10**		**23**	**23**	**111**
Volleyball	**50**	**48**	**98**	**3**	**5**	**8**				**106**
Beach	12	10	22	1	1	2				24
Volleyball	38	38	76	2	4	6				82
Weightlifting	**170**	**77**	**246**	**44**	**43**	**87**		**3**	**3**	**336**
Wrestling	**142**	**62**	**204**	**12**	**33**	**45**		**25**	**25**	**274**
Freestyle	95	37	132	8	29	37		14	14	183
Greco-Roman	47	25	72	4	4	8		11	11	91

21.0 Adverse Analytical Findings and Outcomes [9]

	Sample Collection Date	Sport	Substance(s) Found	Test Type	Sample Type	Outcome
1	23 July 2021	Triathlon	EPO	OOC	Urine/ Blood	Provisionally Suspended. Decision Pending.
2	26 July 2021	Gymnastics	Triamcinolone acetonide	IC	Urine	No ADRV - Permitted Route
3	28 July 2021	Athletics	Methasterone	OOC	Urine	Provisionally Suspended. Decision Pending.
4	29 July 2021	Aquatics	Terbutaline	IC	Urine	No ADRV - TUE
5	31 July 2021	Athletics	Dehydrochloromethyl-testosterone; metandienone; tamoxifen	OOC	Urine	Provisionally Suspended. Decision Pending.
6	2 August 2021	Hockey	Dexamethasone	IC	Urine	No ADRV - Permitted Route
7	2 August 2021	Athletics	Blood Transfusion	OOC	Blood	Provisionally Suspended. Decision Pending.
8	6 August 2021	Wrestling	Betamethasone	IC	Urine	No ADRV - Permitted Route
9	7 August 2021	Athletics	SARMS enobosarm (ostarine); SARMS S-23	IC	Urine	Provisionally Suspended. Decision Pending.
10	8 August 2021	Athletics	Blood Transfusion	IC	Blood	Provisionally Suspended. Decision Pending.

[9] During the Games Period (13 July 2021 – 8 August 2021)