Joint-statement by the Athletics Integrity Unit of World Athletics and the World Anti-Doping Agency in relation to the case of Italian race walker Alex Schwazer

Executive Summary

Further to the World Anti-Doping Agency's (WADA) media statement of 22 April 2021 regarding the case of Italian race walker, Alex Schwazer, WADA and the Athletics Integrity Unit of World Athletics (AIU) have conducted additional investigations, which fully confirm their position that the 1 January 2016 sample of Alex Schwazer (the "**Sample**") was not subject to any form of manipulation.

The finding by investigating judge Pelino in his decision of 18 February 2021 that the Sample was likely to have been manipulated was based on the contention that the concentration of DNA in the Sample was too elevated to be physiological. From that premise, Judge Pelino concluded that the Sample must have been 'concentrated' (e.g. by heating) in order to increase the likelihood that it would test positive, with the consequence that the DNA levels increased.

The specific manipulation scenario that Judge Pelino devised around that 'concentration' thesis was that an unidentified person obtained a third party's sample that contained synthetic (i.e. exogenous) testosterone, exposed it to ultra violet rays to remove all traces of that third party's DNA, mixed it with the Sample, then heated the combined sample to increase the concentration of synthetic testosterone (and, inadvertently, DNA).

Since WADA's statement in April 2021, the AIU (on behalf of World Athletics) commissioned the Forensic Genetics Unit in Lausanne (which has an ISO-accreditation for DNA analysis) to conduct a study involving the analysis of the urinary DNA concentrations of 100 samples from male endurance athletes. The results demonstrate conclusively that the DNA concentration in the Sample is well within the physiological range. Indeed, much higher values were obtained, even after years of storage, and approximately 20% of the samples had DNA concentrations greater than the highest concentration detected in the Sample. Therefore, the whole basis for the manipulation scenario (i.e. the supposedly non-physiological concentration of DNA in the Sample) is wrong.

In addition, WADA sought the opinion of a leading international anti-doping scientist *viz.* Professor Martial Saugy as to the plausibility of the manipulation scenario. The very clear opinion of Professor Saugy is that the manipulation scenario devised by Judge Pelino is wholly implausible. First, it would make no scientific sense to heat (or concentrate) the mixture of urines as this would not increase the likelihood of the Sample testing positive. Second, there is no indication of manipulation in the analytical data; according to Professor Saugy, it would have been close to impossible to manipulate the Sample in the manner described without leaving analytical traces. Third, this would have required access to Mr. Schwazer's steroid profile, which the Cologne laboratory did not have.

This statement is comprised of four parts, as follows: (i) a recap of the salient parts of the WADA media statement of 22 April 2021, (ii) a discussion of the results of the new study regarding DNA concentrations commissioned by the AIU on behalf of World Athletics, (iii) a summary of the opinion of Professor Saugy as to the plausibility of the manipulation scenario and (iv) concluding remarks.

(i) WADA's 22 April 2021 Statement

World Athletics collected the Sample from Mr. Schwazer on 1 January 2016. The anti-doping laboratory in Cologne reported the Sample negative for prohibited substances after initial routine testing. However, when the results were uploaded into WADA's Anti-Doping Administration and Management System (ADAMS), the steroid data of the Sample triggered a review by the independent Athlete Passport Management Unit (APMU) at the anti-doping laboratory in Montreal. In its review of Mr. Schwazer's anonymized steroid profile, the APMU noticed that certain testosterone-related steroid values in the Sample were inconsistent with the same values in other samples belonging to the Athlete. In accordance with the relevant international protocols, it therefore asked the Cologne laboratory to test the Sample again using a specific technique – isotope-ratio mass spectrometry (IRMS) – to determine whether the testosterone in the Sample was natural or synthetic. The IRMS testing showed that the testosterone was synthetic.

The Court of Arbitration for Sport (CAS) heard the case in early August 2016. It rejected the various complaints that Mr. Schwazer made about the handling and testing of the Sample, including his allegation that the Sample must have

been tampered with, and banned him for eight more years, the lengthy ban reflecting the fact that it was his second offence (CAS 2016/A/4707).[1]

After the CAS decision, a public prosecutor in Bolzano opened criminal proceedings against Mr. Schwazer to determine whether he should be prosecuted for doping under Italian criminal law.

The investigating judge (or rather his court-appointed DNA expert) was provided with urine left over from the Sample[2], and ordered DNA analysis. That analysis confirmed that the urine contained only Mr. Schwazer's DNA.

In November 2020, the public prosecutor in Bolzano decided that there was insufficient evidence to prove a charge of intentional doping. He therefore decided to discontinue the criminal proceedings. Importantly, however, he specifically found that there was not sufficient evidence to say that the Sample had been manipulated.

However, the investigating judge *viz.* Judge Pelino disagreed with the public prosecutor. He issued a decision on 18 February 2021 which alleged that an unidentified person secretly obtained a third party's sample that contained synthetic testosterone, exposed it to ultra-violet rays to remove all traces of that third party's DNA, mixed it with the Sample, then heated the combined sample to increase the concentration of synthetic testosterone.[3]

[1] Mr. Schwazer was banned in 2012 for three years and nine months for using recombinant Erythropoietin (EPO) and for evading sample collection in an attempt to avoid detection. In subsequent criminal proceedings in Italy, Mr Schwazer admitted his use of EPO, also admitted that he had purchased and used synthetic testosterone on various occasions in 2011, and pleaded guilty to intentional doping.

[2] Judge Pelino claims in his decision that after the Cologne appeals court granted his request to be provided with a portion of the remaining urine from the Sample for analysis, the Cologne laboratory improperly tried to provide his appointed expert viz. Colonel Lago with a 6 mL aliquot from the B Sample contained in an unsealed bottle that had not been mentioned before and had not been stored within the normal chain of custody. This could not be further from the truth: the 6 mL aliquot, left over from the 2016 analysis of the B Sample had been carefully maintained within the Cologne laboratory's chain of custody, and was the specific aliquot that the Cologne appeals court ordered should be handed over to Mr Pelino's expert. When the order was made by the Cologne court, World Athletics (by letter of 24 October 2017) offered *ex gratia* to provide the 6 mL of the B Sample urine from the original B Sample bottle (instead of the 6 mL from the aliquot tube, per the court decision). The Cologne public prosecutor passed this offer on to Judge Pelino by letter of 26 October 2017. Judge Pelino did not respond to the Cologne prosecutor's letter until eleven weeks later on 11 January 2018, claiming that he had only just received it. In his response, Judge Pelino made no reference to the offer by World Athletics to provide urine from the B Sample bottle (as opposed to the aliquot that it was required to deliver under the decision of the Cologne appeals court). Therefore, the order of the Cologne court remained as originally stated i.e. to hand over the 6 mL aliquot. It was therefore quite a surprise when Judge Pelino's expert objected to being given that aliquot. However, World Athletics agreed once again to hand over the 6mL from the original B Sample bottle (despite having prepared the aliquot for delivery in accordance with the court order) and that is what was ultimately delivered to Judge Pelino's expert.

[3] Neither WADA nor World Athletics had any right to appeal against Judge Pelino's decision on the merits.

The key evidence Judge Pelino relied on to make that finding is the fact that one aliquot (portion) of the Sample, when tested for DNA more than two years later, contained Mr. Schwazer's DNA at a concentration of approximately 2,500 pg/µL. The court-appointed expert *viz.* Colonel Lago opined that, given degradation over time, the DNA concentration in the Sample at the time of collection could have been as high as 18,969 pg/µL. Judge Pelino decided that this concentration was outside of the range of DNA concentrations that would be seen in a healthy human such as Mr. Schwazer. Having excluded other possible causes identified by Colonel Lago, he therefore concluded that the Sample must have been spiked and concentrated in the manner described above.

Already in its statement in April 2021, WADA made the following points to demonstrate how implausible the manipulation scenario was:

- Neither WADA, nor World Athletics, nor the Cologne laboratory, nor anyone else involved with the doping control in this case, had any plausible motive for committing such an outrageous act.
- Mr. Schwazer transferred the urine that he provided on 1 January 2016 into two sealed glass bottles (A and B). There were no breaches in the external chain of custody of the Sample (transportation from doping control to the laboratory) or in the internal chain of custody (within the laboratory). The CAS Panel found, after hearing witness testimony from the doping control officer who collected the Sample as well as from the courier, that the transport of the Sample from Racines (place of residence of Mr Schwazer) to Cologne occurred in a manner that protected its "*integrity, identity and security*". The CAS Panel also found, based on a thorough examination of the Laboratory Documentation Package and witness evidence from the Cologne laboratory staff, that all the movements of the Sample within the Cologne laboratory were "*properly documented*". None of the witnesses relevant to the external or internal chain of custody was ever examined by Judge Pelino.
- The Sample was anonymized, and so no one at the Cologne laboratory knew it belonged to Mr. Schwazer, either when they conducted the initial testing of the A Sample, or when they conducted the IRMS testing of the A Sample and found that the testosterone it contained was synthetic. Nor did anyone at the Montreal laboratory APMU know that the steroid profile they were looking at belonged to Mr. Schwazer when they requested the specific IRMS test.

- Mr. Schwazer's representatives were present in the Cologne laboratory in July 2016 for the opening of his B Sample. They confirmed, by signing the relevant form, that the Sample seal was intact and that there was no sign of tampering.

- The CAS Panel, which (unlike Judge Pelino) examined representatives of the Cologne and Montreal laboratories, specifically found that "*no breach of the anonymity of the Sample and of the anonymity of the Appellant occurred*" and, in particular, that the Cologne laboratory staff "*had no clue to whom the 1 January Sample belonged*".

- Furthermore, if the intent was to frame Mr. Schwazer, why spike his Sample with a substance that would not be distinguishable, in routine testing, from endogenous testosterone? Why leave it to chance that the independent APMU would subsequently spot an anomaly in the steroid profile and call for IRMS testing of the Sample? Why not simply spike the Sample with a well-known steroid that is not produced naturally and is detected easily (e.g. stanozolol), so that instant detection and an immediate charge was certain?

- As for the supposedly decisive evidence – the fact that the concentration of Mr. Schwazer's DNA in a portion of his B Sample (projected to be between 3,245 pg/µL and 18,969 pg/µL at collection) was supposedly outside the normal range for healthy humans – in fact:

    - DNA concentrations in urine can vary widely, as urine is a waste product that collects DNA as it leaves the body, not a cellular substance like blood.

    - A concentration of 2,500 pg/µL, and even the highest projected value of 18,969 pg/µL, is within the range of DNA concentrations found in healthy humans. For example, WADA provided Judge Pelino and Colonel Lago with a report by the Forensic Genetics Unit in Lausanne which stated that it had found DNA in an athlete's sample at a concentration in excess of 25,000 pg/µL.[4]

    - The DNA concentration found in a subsequent sample collected from Mr. Schwazer in July 2016 was 14,013 pg/µL, notwithstanding that that DNA was measured in October 2017, i.e., approximately 16 months after the sample was collected, and therefore after having degraded from its original amount.

[4] Indeed, the court appointed DNA expert (i.e. Colonel Lago) reported DNA concentrations as high as 8,762 pg/µl within the context of his study.

- The investigating judge disregarded all of this evidence. For example, he suggested that the evidence of the Forensic Genetics Unit in Lausanne had not been properly filed with him or Colonel Lago, even though the latter referred to such evidence in his first report.[5]

(ii) The New Study on DNA Concentrations

The AIU, on behalf of World Athletics, commissioned a study to evaluate the urinary DNA concentrations in endurance athletes. More particularly, the Forensic Genetics Unit in Lausanne analysed the DNA concentration in 100 urine samples[6] belonging to male endurance athletes (who had consented to the use of their samples for research purposes). In order to take into account the possibility of degradation of DNA concentrations over time, the AIU selected stored samples the majority of which had been collected between one and three years prior to DNA analysis.[7] So that the Forensic Genetics Unit could conduct the study 'blindly' with respect to the age of the samples, they were not provided with this information.[8]

The following results from the study are particularly noteworthy:

- There is huge variability in the urinary concentrations of DNA, with concentrations ranging from 1 pg/µL to 20,183 pg/µL.

- 20% of the samples had DNA concentrations that were greater than the highest concentration detected in Mr. Schwazer's Sample i.e. 2,500 pg/µL.

- The sample with the highest DNA concentration i.e. 20,183 pg/µL had been collected three years prior to the DNA analysis.

[5] Judge Pelino claimed that the relevant report from the Forensic Genetics Unit in Lausanne was never produced in its entirety by WADA and, importantly, that there was no mention of the DNA concentration in excess of 25,000 pg/µL. This is inaccurate. The full report was provided (1) by WADA's scientific expert (Dr. Sottas) to the expert appointed by Judge Pelino by email on 28 June 2018; and (2) by WADA's Italian counsel to Judge Pelino himself on 26 September 2018.

[6] The 100 samples were comprised of 85 separate doping control samples, 15 of which were subject to analysis of both the A and the B bottles. Where both the A and B samples were analysed, this is indicated in the 'Correspondence' column of the study results table. The 100 samples were comprised, in approximately equal parts, of in-competition and out-of-competition samples.

[7] Indeed, only five samples were analysed (for DNA concentration) within a year of collection.

[8] Therefore, the age of the samples is not set out in the results section of their report. However, this information was subsequently added into the study results table by the Swiss Laboratory for Doping Analyses.

- In total, five samples[9] had a DNA concentration in excess of 10,000 pg/µL (four times higher than the highest concentration detected in Mr. Schwazer's Sample). Two of those samples had been collected three years prior to DNA analysis, two were collected more than 18 months prior to DNA analysis and the final one was collected 5 months prior to DNA analysis.

These results clearly demonstrate that the DNA concentration in the Sample is not too high to be physiological, even taking into account that just over two years elapsed between collection and DNA analysis. The results of the study also demonstrate that the DNA concentration reported in Mr. Schwazer's sample from June 2016 i.e. 14,013 pg/µL is within the reported range (albeit at the higher end).

Judge Pelino assumed, based on data from the court-appointed DNA expert *viz.* Colonel Lago, that the DNA in Mr. Schwazer's June 2016 sample would have been at least 80% degraded over the approximately 16 months between collection and DNA analysis. He therefore calculated that the original DNA concentration of that June 2016 sample would have been in excess of 112,000 pg/µL which he dismissed as "*completely implausible*". The Forensic Genetics Unit in Lausanne was able to measure, using a peer-reviewed methodology[10], the actual level of DNA degradation of Mr. Schwazer's June 2016 sample. Contrary to Judge Pelino's assumption, the Forensic Genetics Unit in Lausanne could demonstrate that less than 15% of the DNA in the June 2016 sample was degraded at the time of analysis (16 months after collection).

In short, a significant percentage of the samples in the study presented higher urinary DNA concentrations than the Sample, despite being stored for similar (or even longer) periods of time. Certain samples presented DNA concentrations that were many times higher than the Sample. The DNA concentrations in the Sample and the June 2016 sample were within the reported ranges and cannot therefore be said to be non-physiological.

Finally, the thesis that the vast majority of DNA will necessarily have degraded after 12 months' storage (which was fundamental to Judge Pelino's conclusions) has been shown to be wrong, both by the significant DNA concentrations after long storage periods amongst the 100 athlete samples, but also by the analytical methodology applied to Mr. Schwazer's June 2016 sample.

(iii) The Scientific Plausibility of the Manipulation Scenario

As mentioned above, the manipulation scenario was based on the assumption that the DNA concentration in the Sample was too elevated to be physiological. Judge Pelino therefore alleged that the Sample, after being mixed with

[9] Whereas there are six samples listed as having a concentration in excess of 10,000 pg/µL, two of those results are from the same sample (i.e. both the A and B sample were analysed).

[10] The methodology is based on a comparison of the peak heights of the smaller and larger DNA fragments, bearing in mind that degradation will affect the larger fragments first. Therefore, similar peak heights between the smaller and larger DNA fragments demonstrates a lack of degradation.

a positive third-party urine, must have been concentrated in order to increase the likelihood that it would test positive, and that this must have increased the concentration of Mr. Schwazer's DNA in the mixed sample.

However, as explained by Professor Saugy in his expert opinion, the heating/concentrating of a urine sample will not in any way increase the likelihood that it would test positive. This is because the analytical method (IRMS) that is used to detect exogenous testosterone (or rather to distinguish it from naturally produced or 'endogenous' testosterone) is not based on the concentration of the substance in the urine, but rather on a comparison of the carbon isotope ratio of testosterone with the carbon isotope ratio of other endogenous steroids that would not be affected by the administration of testosterone. In short, it would make no sense to heat the mixture of urines in an effort to make it more likely to test positive.

Even leaving aside the fact that concentrating the sample would not make any sense i.e. it could not achieve the purpose that Judge Pelino ascribed to it, Professor Saugy opined that it would be close to impossible to mix Mr. Schwazer's sample with another urine and to heat that mixture without disturbing other ratios within Mr. Schwazer's specific steroid profile (as established from other doping control samples). This would not only be a nearly impossible exercise, it would also require that the manipulator(s) had access to Mr. Schwazer's steroid profile, which the Cologne laboratory did not. Professor Saugy opines that there is no analytical indication of manipulation whatsoever. Rather, the analytical data of the Sample are consistent with the ingestion by Mr. Schwazer of testosterone prior to 1 January 2016, and the subsequent samples show the relevant steroid values normalizing after that ingestion.

In addition to the flawed premise of the manipulation scenario, its inherent implausibility and the lack of any analytical indication of manipulation, Professor Saugy concludes that it would be remarkable that the manipulator would be so sophisticated as to pull off such a scientifically complex operation but at the same time fail to understand that concentrating the sample would not in any way achieve its purpose i.e. to render the Sample more likely to test positive.

(iv) Concluding Remarks

Judge Pelino ordered DNA analysis of the Sample to ascertain whether it belonged to Mr. Schwazer. When it transpired that the Sample contained DNA only from Mr. Schwazer, it is surprising that the manipulation hypothesis

was not discarded at that stage. However, Judge Pelino decided to investigate the DNA concentration in the sample as a possible indication that the Sample had been tampered with.

When evidence was produced by WADA that (i) the Forensic Genetics Unit in Lausanne had previously reported DNA concentrations approximately ten times higher than the highest one in the Sample and (ii) Mr. Schwazer himself had produced a urine sample (collected less than six months after the Sample) with a urinary DNA concentration more than five times higher than that in the Sample, that route of enquiry appeared to be entirely moot. However, Judge Pelino disregarded that evidence and ultimately decided that the DNA concentration in the Sample was too high to be physiological. From that premise, he concluded that the Sample must have been 'concentrated' (resulting in the increased DNA concentration). This gave rise to the manipulation thesis involving positive urine (from a third party) that was denuded of its DNA content by exposure to UV rays, mixed with the Sample and then heated/concentrated so as to render the exogenous testosterone more detectable.

Even leaving aside the fact that, as recorded in the CAS Award (i) the sealed B Sample was opened and analysed in the presence of Mr. Schwazer's representatives and (ii) nobody in the Cologne laboratory had any motive to tamper with the Sample or even knew who the Sample belonged to, it makes little sense to engage in such an elaborate manipulation scenario involving third party urine containing an endogenously-produced steroid when one could simply have spiked the Sample with an exogenous steroid. Moreover, the notion that the Sample was concentrated to make the (exogenous) testosterone easier to detect is based on a fundamental misapprehension as to how the relevant analytical method for detecting exogenous testosterone works.

In any event, the whole premise for the manipulation scenario i.e. the allegedly non-physiological level of DNA in the Sample, is clearly contradicted by science, namely the results of the DNA study of the Forensic Genetics Unit in Lausanne. Finally, the manipulation scenario is wholly implausible – if not to say impossible – from a scientific perspective: it would have been close to impossible to subject the sample to the various processes involved in the alleged manipulation while preserving Mr. Schwazer's specific endogenous steroid profile.