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SHORT COMMUNICATION

Doping in sports: findings of the analytical test and its interpretation by the public

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Abstract
The analytical tests need following norms but in anti-doping tests, it is not enough to report the outcomes but it is necessary that the athletes and non-athletes understand the meaning of an adverse analytical result and its origin.

Keywords Doping · Adverse analytical finding · WADA · Analytical test

An analytical test is a medical procedure that at times involves testing collected samples of urine, blood, or other substance from the body. In instances such as reporting of anti-doping tests, it is not enough just to report the results, but it is necessary that the athletes and non-athletes understand the meaning of those results and the underlying process. An athlete can be selected for testing at following two periods—in competition and out of the competition. In competition, the doping analytic tests are carried out following these two main criterions: random selection (usually in team sports) and winners of competitions (such as athleticism, swimming, etc.). For out of competition collections, the athletes report to a specific site and the samples are collected in presence of the agents from the responsible laboratory. In all cases, worker from certified laboratory read to the athlete her/his rights and responsibilities in the doping control process. Then athlete will be invited her/him to complete a form. Prior to sample collection, agent from the certified laboratory will verify the identity of the athlete required to give sample, and be with the athlete to ensure legitimate collection. Finally, athlete signs the form thereby acknowledging proper collection process was used. Collected sample is divided into two—sample A and sample B. Sample A will be analyzed first and only if it yields adverse result – sample B is analyzed. An adverse analytical finding means—that a WADA-accredited or WADA-approved laboratory, following the International Standard for Laboratories and related Technical Documents, has identified in a sample the presence of a prohibited substance or its metabolites or markers that in turn is an evidence of the use of a prohibited substance [1].

In different competitions all through a year there are different anti-doping tests performed, by various organizations responsible for conducting major tournaments. Examples include—recent qualifiers for the FIFA Soccer World Cup in Russia 2018 or even during the training period as in the case of mixed martial arts. As shown in Fig. 1, the reported number of adverse analytical findings [2] have been increasing.

As an adverse analytical finding for an athlete is widely publicized and usually has a larger impact well beyond the athlete—there is a need for a clear explanation in lay man terms to the public in general. Recently during the last FIFA Soccer World Cup classifier games there was a case of an athlete who tested positive for benzoylecgonine, a metabolite of cocaine. Because of the high stakes involved in such finding, numerous speculations started raising in the public sphere—questioning the validity of the collection and analytical process.

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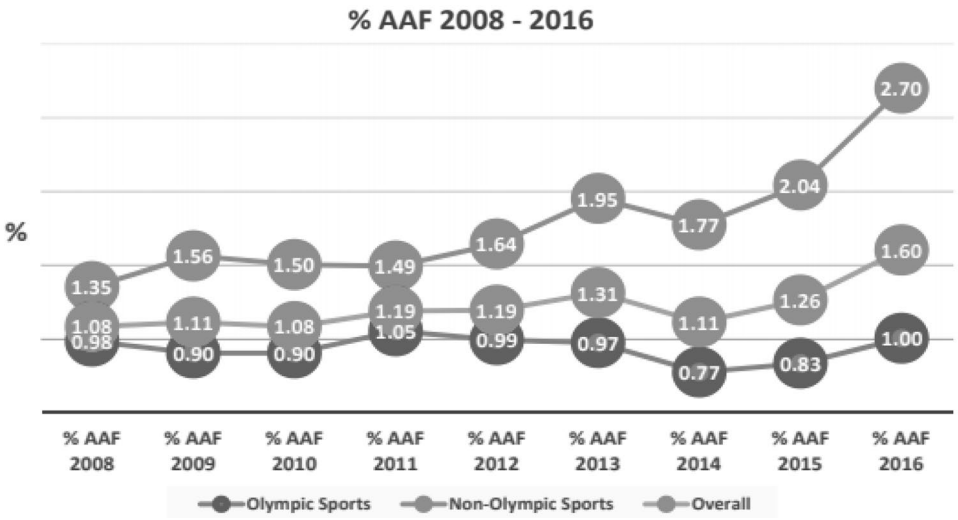

Fig. 1 Adverse analytical findings (AAF). Source: WADA Report 2016 [2]

The following explanations were widely disseminated in the media to explain, supposedly, how cocaine entered the athlete's body: athlete had sex with a partner who was a cocaine user; athlete drank tea from a cup in which athlete served previously had used coca leaves; consumed a flu shot with pseudoephedrine that got metabolized to benzoylecgonine; benzoylecgonine was added following the collection of the urine sample; benzoylecgonine was added to sample B; the athlete lives in a city where benzoylecgonine was shown to be present in the tap water [3], the amount of benzoylecgonine was too small to be related to cocaine consumption. Presence of such explanations clearly demonstrates a lack of understanding of regulated analytical tests.

The World Anti-Doping Agency (WADA) was established in 1999 and is responsible for monitoring use of illicit agents to get an unfair advantage in various competitions. World Anti-Doping Code is a detailed document that sets protocols and procedure for all steps in carrying out these measurements and implementing anti-doping policies in all sports around the world. WADA establishes the list of prohibited substances [4], which is updated yearly and includes a list of accredited laboratories to perform these anti-doping tests. All mentioned aspects show that the analytical tests in the case of doping are clearly regulated by a process that is not known or understood by the general population, resulting in widespread speculation and this generates a problem since it is believed that the results can be easily misinterpreted, that the samples can be changed or contaminated after the collection in a simple way and that even the positive result can be considered as not relevant. As this distorted and erroneous information transmits through various media platforms (including social media), it has a broader negative impact on the image of laboratory tests, which these days are carried out following by reputable organizations using well-established ISO standards. Therefore, it is not enough that the institutions requesting the test simply reports the results to the public, but it is its duty to inform and educate the public on how these tests are performed so that the validity of the analytical results are not doubted by the public.

As a main recommendation, it is essential that young athletes at school are educated on various principles around doping. WADA website has an interactive game to explain in detail consequences of doping. There is future plan to develop this in different language as well. This issue should be part of various healthcare professionals curriculum such as medicine, pharmacy, and nursing. Some tournaments on the doping knowledge can be implemented as well to create an anti-doping culture in schools, universities and even sports clubs.

Another possible venue for education will be short TV programs during important sporting events. In this way, it can be possible to have a public that truly understands the meaning of anti-doping tests and the accompanying results.

Compliance with Ethical Standards

Conflict of interest The authors declare they have no conflict of interest.

Ethical approval This article does not contain any studies with human participants performed by any of the authors.

Informed consent There was no need to obtain individual consent for inclusion in the present study since there was no exposure to any form of experimentation nor disclosure of personal identifiers or information.

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