# ATHLETE BIOLOGICAL PASSPORT

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## 1. WHAT IS THE ATHLETE BIOLOGICAL PASSPORT (ABP)?

The fundamental principle of the Athlete Biological Passport (ABP) is to monitor selected variables (`biomarkers of doping´) over time that indirectly reveal the effect of doping, as opposed to the traditional direct detection of doping by analytical doping controls.

## 2. WHAT MODULES COMPOSE THE ABP?

The ABP is currently composed of two modules:

- The Haematological Module, introduced in December 2009, aims to identify enhancement of oxygen transport, including use of erythropoiesis-stimulating agents (ESAs) and any form of blood transfusion or manipulation.
- The Steroidal Module, introduced on January 1st, 2014, aims to identify endogenous anabolic androgenic steroids (EAAS) when administered exogenously (i.e. not created by the human body) and other anabolic agents, such as selective androgen receptor modulators (SARMS).

The Haematological Module considers a panel of biomarkers of blood doping that are measured in an athlete's blood sample. The Steroidal Module considers a panel of biomarkers of steroid doping measured in an athlete's urine sample.

## 3. WHAT IS THE OBJECTIVE OF THE ABP?

The objective of integrating the ABP into the larger framework of a robust anti-doping program is twofold:

1) To identify and target athletes for specific analytical testing by intelligent and timely interpretation of passport data;

- For the Haematological Module, this includes Erytrhopoiesis-Stimulating Agents (ESAs) and homologous blood transfusion (HBT) tests;
- For the Steroidal Module, this includes Isotope Ratio Mass Spectrometry (IRMS) to detect endogenous steroids administered exogenously.

2) To pursue possible anti-doping rule violations (ADRVs) in accordance with Article 2.2 (Use or attempted use by an athlete of a prohibited substance or a prohibited method) of the World Anti-Doping Code (Code).

## 4. WHAT IS WADA CURRENTLY DOING TO FURTHER DEVELOP THE ABP?

WADA is engaged with experts and stakeholders to further develop the ABP and is working on an endocrine module which aims to detect the abuse of growth factors such as growth hormone. The long-term goal of the ABP is the development of a large panel of biomarkers of doping in taking advantage of recent advances in analytical chemistry and a better understanding of systems biology through 'omics' fields such as proteomics and metabolomics.

## 5. DOES THE ABP REPLACE TRADITIONAL DOPING CONTROL?

No. The fight against doping relies on several strategies, including the direct testing of athletes as well as evidence gathered in the context of non-analytical anti-doping rule violations. By combining these strategies, and seeking new ones to address emerging threats, the global fight against doping is more effective.

The typical doping control approach based on the detection of prohibited substance or their metabolites in an athlete's sample is an effective approach; however it has limitations when an athlete may be using substances on an intermittent and/or low-dose basis. Furthermore, new substances or modifications of prohibited substances (e.g. designer drugs) may be difficult to detect by conventional analytical means. In recent years, doping regimes have become much more scientifically planned and have taken advantage of the weaknesses in traditional protocols. The ABP complements the traditional anti-doping testing approach to enhance the cost-efficiency of anti-doping programs.

## 6. IS THERE ANY MANDATORY REQUIREMENT IN THE ABP?

**WADA's ABP Guidelines** (//**www.wada-ama.org/en/resources/science-medicine/athlete-biological-passport-operational-guidelines**) foster consistency and uniformity in application, without mandating specific administrative or procedural elements. Each Anti-Doping Organization remains free to implement the recommended processes suggested in the Guidelines to reflect its own resources and context.

Nevertheless, a series of mandatory protocols related to sample collection, analysis and legal considerations must be rigorously followed to ensure both legal fortitude, scientific certainty, and to support mutual recognition and sharing of data between organizations. These mandatory protocols are given in the Appendices of the Guidelines. Only programs that fully adhere to these protocols and fully utilize ADAMS can be considered official ABP programs rather than general 'profiling' programs.

## 7. ARE ALL ADOS EXPECTED TO RUN BOTH MODULES?

No. An assessment of the physiological risks of sports and their disciplines should be carried out in order to ascertain which module(s) may be applicable.

The Haematological Module evaluates red blood cell variables. Red blood cells carry oxygen to the cells, and therefore blood manipulation is likely in sports where endurance is advantageous to athletes (e.g. use of erythrocyte stimulating agents or blood transfusions). However, the advantage of improving oxygen carrying capacity extends to sports that are not typically endurance events, but nevertheless have a large aerobic component. For the Haematological Module, athletes must be identified by the ADOs as being part of the ABP program, as there are specific blood tests that must be obtained.

The Steroidal Module refers to Anabolic Androgenic Steroids, which may be particularly abused by athletes in sports requiring strength and power. These substances may also increase the production of red blood cells and affect recovery. Therefore, they may also be used by endurance athletes.

All urine samples are automatically analyzed for the Steroidal Module, "steroid profile", which means that any athlete who has been tested is essentially part of a Passport program. As soon as an athlete has more than one urine sample analyzed, a longitudinal steroid profile will be established in ADAMS.

## 8. SHOULD AN ADO HAVE IMPLEMENTED THE HAEMATOLOGICAL MODULE IN ORDER TO RUN THE STEROIDAL MODULE?

No. All urine samples are analyzed for the Steroidal Module, "steroid profile" with results reported in ADAMS by the WADA accredited laboratories, regardless whether a blood sample was collected at the same time on the athlete or more generally whether the ADO implemented the Haematological Module.

## 9. WHAT IF A SPORT DOES NOT REQUIRE ENDURANCE OR STRENGTH? SHOULD THE ADO STILL IMPLEMENT A MODULE OF THE PASSPORT?

The Steroidal Module is automatically applied, i.e. ordinary urine tests is part of the Steroidal Module. The ADO may decide that the Haematological Module is not a necessary part of their overall anti-doping strategy and need not be implemented.

## 10. WHAT IS AN ATHLETE PASSPORT MANAGEMENT UNIT (APMU)?

An APMU is composed of persons designated by the ADO to administer an ABP. The Unit, ideally a WADA accredited laboratory-associated APMU, is responsible for the administrative management of Athlete Passports, advising the ADO on intelligent target testing, liaising with the Expert Panel, compiling and authorizing an ABP Documentation Package and reporting Adverse Passport Findings.

## 11. DOES AN ADO HAVE TO CONTRACT AN APMU?

Larger ADOs may in some situations operate an in-house APMU. Otherwise it is advisable for the ADOs to contract an APMU associated with a WADA accredited laboratory. The APMU may or may not operate both Haematological and Steroidal Modules. If the ADO is not running the Haematological Module, then only a steroidal APMU needs to be contracted or integrated into existing administrative processes.

If for some reason the ADO has not already engaged an APMU, and a steroidal Atypical Passport Finding (ATPF) is reported with a negative or inconclusive IRMS, then the responsible ADO should seek further guidance from the laboratory that performed the test. (More information can be found in the Q&A on the ABP Steroidal Module in the menu on the left.)

## 12. HOW SHOULD AN ADO PROCEED TO SELECT ITS APMU?

WADA encourages ADOs to establish a relationship with a WADA accredited laboratory-associated APMU, given that this is where the expertise required for data interpretation is most accessible. Some larger ADOs may have the appropriate scientific, analytical and medical expertise available to operate an APMU 'in-house.' It is possible that some ADOs who do not run a Haematological ABP program and where the risk of steroid doping is very low, decide to manage Atypical Passport Findings (ATPF) as they arise.

## 13. WHERE CAN AN ADO FIND THE LIST OF AVAILABLE ATHLETE PASSPORT MANAGEMENT UNITS (APMUS) FOR THE HAEMOTOLOGICAL AND STEROIDAL MODULES?

Please consult the **list of APMUs associated with WADA accredited laboratories** (**//www.wada-ama.org/en/resources/athlete-biological-passport/list-of-athlete-passport-management-units-apmu**).

## 14. SHOULD AN ANTI-DOPING ORGANIZATION (ADO) HAVE ITS OWN PANEL OF EXPERTS?

Not necessarily. WADA encourages ADOs to contract Athlete Passport Management Unit (APMU) that already have experts associated with them; however ADOs may choose to retain their own experts should they wish.