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BIOLOGICAL PASSPORT

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Notes

A FALSE START IN THE RACE AGAINST DOPING IN SPORT: CONCERNS WITH CYCLING'S BIOLOGICAL PASSPORT

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The biological passport is . . . like a custom-built Ferrari: but maybe it's been put on the road too soon to act as an anti-doping control.

– Dr. Roberto Corsetti¹

ABSTRACT

Professional cycling has suffered from a number of doping scandals. The sport's governing bodies have responded by implementing an aggressive new antidoping program known as the biological passport. Cycling's biological passport marks a departure from traditional antidoping efforts, which have focused on directly detecting prohibited substances in a cyclist's system. Instead, the biological passport tracks biological variables in a cyclist's blood and urine over time, monitoring for fluctuations that are thought to indirectly reveal the effects of doping. Although this method of indirect detection is promising, it also raises serious legal and scientific concerns. Since its introduction, the cycling community has debated the reliability of indirect biological-passport evidence and the clarity, consistency, and transparency of its use in proving doping violations. Such uncertainty undermines the legitimacy of finding

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1. Barry Ryan, *UCI Biological Passport Panel Member Calls for More Transparency*, CYCLING NEWS (Nov. 21, 2010, 11:50 AM), <http://www.cyclingnews.com/news/uci-biological-passport-panel-member-calls-for-more-transparency> (quoting Dr. Corsetti) (internal quotation marks omitted).

cyclists guilty of doping based on this indirect evidence alone. Antidoping authorities should address these important concerns before continuing to pursue doping sanctions against cyclists solely on the basis of their biological passports.

INTRODUCTION

Doping² is as old as the sport of cycling itself.³ As early as the nineteenth century, cyclists competing in the grueling “six-day” races concocted cocktails of caffeine, strychnine, and cocaine to improve their performance.⁴ In the years since, long-distance cycling has become known as “the most consistently drug-soaked sport of the twentieth century.”⁵

In October 2007, the International Cycling Union (UCI)⁶ and World Anti-Doping Agency (WADA)⁷ agreed to implement a radical

2. For the purposes of this Note, the term “doping” will be used to refer generally to the use of any prohibited substance or method to improve athletic performance. Similarly, the World Anti-Doping Code (Code) defines doping broadly as “the occurrence of one or more of the anti-doping rule violations” described in the Code. WORLD ANTI-DOPING AGENCY, WORLD ANTI-DOPING CODE 18 (2009), available at http://www.wada-ama.org/rtecontent/document/code_v2009_EN.pdf. These doping violations include having of a prohibited substance in an athlete’s blood or urine, using or attempting to use a prohibited substance or method, refusing to submit to or missing doping tests, tampering with doping-test samples, possessing or trafficking in a prohibited substance or method, or administering a prohibited substance or method to another athlete. *Id.* at 19–25. The Prohibited List details the various prohibited substances and methods defined as doping under the Code. *Id.* at 29.

3. In fact, the history of doping in sport dates back thousands of years. The ancient Greeks experimented with the performance-enhancing effects of dried figs as early as the Olympic Games of 668 B.C. They also experimented with the stimulant effects of brandy and wine and even reportedly ate animal and human testes to boost their testosterone levels. Richard I.G. Holt, Ioulietta Erotokritou-Mulligan & Peter H. Sönksen, *The History of Doping and Growth Hormone Abuse in Sport*, 19 GROWTH HORMONE & IGF RES. 320, 320 (2009); see also *A Brief History of Anti-Doping*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/About-WADA/History/A-Brief-History-of-Anti-Doping> (last updated June 2010) (providing a historical account of doping practices).

4. Holt et al., *supra* note 3, at 321.

5. John Hoberman, *How Drug Testing Fails: The Politics of Doping Control*, in DOPING IN ELITE SPORT: THE POLITICS OF DRUGS IN THE OLYMPIC MOVEMENT 241, 264 (Wayne Wilson & Edward Derse eds., 2001).

6. The UCI is the international federation (IF) that governs the sport of professional cycling. *Mission Statement*, UNION CYCLISTE INTERNATIONALE, <http://www.uci.ch/templates/UCI/UCI1/layout.asp?MenuId=MTI2NjA&LangId=1> (last visited Oct. 7, 2011).

7. WADA is the international organization that governs antidoping efforts across all Olympic sports, including professional cycling. *About WADA*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/About-WADA> (last updated June 2011).

new antidoping program known as the biological passport.⁸ This decision came in the wake of an extraordinary succession of doping scandals surrounding the 2007 Tour de France⁹—a “doping crisis”¹⁰ that rocked professional cycling and threatened the sport’s credibility.¹¹

Cycling’s biological passport represents an aggressive new approach to antidoping efforts in sport. The biological passport is an individual, electronic profile¹² that collates various biological parameters in a cyclist’s blood and urine.¹³ Whereas antidoping efforts have traditionally focused on the *direct* detection of prohibited substances in a cyclist’s blood or urine,¹⁴ the biological passport

8. Juliet Macur, *Cycling Union Takes Leap in Fight Against Doping*, N.Y. TIMES, Oct. 24, 2007, at D5 (calling the biological passport “a monumental step for cycling”).

9. At the 2007 Tour, prerace favorite Alexander Vinokourov tested positive for illegal blood doping and was banned from the sport for two years. Edward Wyatt, *Tour Is Hit with Another Blow as a Favorite Fails a Drug Test*, N.Y. TIMES, July 25, 2007, at D1 [hereinafter Wyatt, *Tour Is Hit*]. Following Vinokourov’s positive doping test, his entire Astana team withdrew from the race. *Id.* Subsequently, the Tour’s overall leader, Michael Rasmussen, was expelled from the race for lying about his whereabouts to evade prerace doping tests. Edward Wyatt, *Tour in Tatters: Race Leader Ousted by His Team*, N.Y. TIMES, July 26, 2007, at A1. Finally, more than a year after winning the 2006 Tour de France, Floyd Landis was ignominiously stripped of his Tour crown after the U.S. Anti-Doping Agency (USADA) upheld his positive test for prohibited synthetic-testosterone use during that race. Juliet Macur, *Landis Loses His Case and Title*, N.Y. TIMES, Sept. 21, 2007, at D1 (noting that Landis was “the first champion in the history of the [Tour de France] to lose the title because of a doping offense”).

10. Wyatt, *Tour Is Hit*, *supra* note 9.

11. See Juliet Macur, *As Scandals Arose, Armstrong Just Rode On*, N.Y. TIMES, Jan. 2, 2010, at D7 (“[T]he race [was] a pharmacological feat, not a physical one. The sport’s credibility was crumbling.”); John Leicester, *Cycling—and Tour de France—Mired in Scandal, Having Failed To Learn from Past*, ASSOCIATED PRESS, July 26, 2007, available at Factiva, Doc. No. APRS000020070727e37r009vp (“An optimist—and there aren’t many left in cycling—would say that the only advantage for the scandal-mired sport is that things can’t get much worse.”).

12. For an illustration of a biological-passport profile, see UNION CYCLISTE INTERNATIONALE, THE BIOLOGICAL PASSPORT AND THE UCI’S ANTI-DOPING MEASURES 17–18 (2008), available at <http://www.uci.ch/Modules/BUILTIN/getObject.asp?MenuId=MjI0NQ&ObjTypeCode=FILE&type=FILE&id=NDY4MjA&LangId=1>.

13. The biological variables monitored include hemoglobin, reticulocytes, and hematocrit. Michael Wozny, *The Biological Passport and Doping in Athletics*, 376 LANCET 79, 79 (2010); *Biological Passport—Questions/Answers*, UNION CYCLISTE INTERNATIONALE, <http://www.uci.ch/templates/UCI/UCI2/layout.asp?MenuId=MTU4ODY&LangId=1> (last updated Feb. 9, 2011).

14. Richard H. McLaren, *CAS Doping Jurisprudence: What Can We Learn?*, 2006 INT’L SPORTS L. REV. 4, 9 (2006) (“[D]oping offences are usually established by direct evidence, where a positive drug test will directly show that an athlete had a prohibited substance in [his] body . . .”). This statement is somewhat of an oversimplification. See *infra* note 113.

instead tracks fluctuations in otherwise-normal biological variables that are thought to *indirectly* reveal the effects of doping.¹⁵

In other words, cycling's biological passport does not require a cyclist to actually test positive for a prohibited substance or method—a result known as an *analytical positive* finding—before being found guilty of doping.¹⁶ Instead, cyclists can be prosecuted, found guilty, and sanctioned for doping based solely on inferences drawn from biological fluctuations.

Although the Court of Arbitration for Sport (CAS) has upheld the initial doping sanctions that have arisen under cycling's biological passport, this Note argues that serious concerns remain regarding the reliability of inferences drawn from biological-passport data and regarding the fairness of sanctioning cyclists for doping solely on the basis of this indirect evidence. As a result, the program's approach fails to strike the proper balance between effectively policing the sport for doping and safeguarding cyclists' individual rights.¹⁷ Accordingly, until the science underlying cycling's biological passport has been further refined, cyclists should not be found guilty of doping violations unless additional corroborating evidence of doping exists.

Part I of this Note provides an overview of the antidoping framework in international sport, describing the numerous international and national organizations that manage and administer antidoping policy. Part II describes the shifting focus of antidoping efforts, from traditional approaches premised on direct detection of doping to more recent efforts that rely increasingly on indirect detection. Part III discusses the introduction of cycling's biological passport and the first antidoping cases pursued under the program.

15. See *Athlete Biological Passport*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/Science-Medicine/Athlete-Biological-Passport> (last updated Dec. 2009) (“The fundamental principle of the [biological passport] is based on the monitoring of an athlete's biological variables over time to facilitate indirect detection of doping on a longitudinal basis, rather than on the traditional direct detection of doping.”); *Biological Passport—Questions/Answers*, *supra* note 13 (“The approach relies on the concept of ‘indirect’ detection. Scientific experts will not actually ‘see’ a banned substance in a sample. Instead, they will compare the parameters of the new sample to parameters measured in previous samples. In this way, fluctuations in the riders’ levels which may indicate manipulation can be identified.”).

16. McLaren, *supra* note 14, at 9.

17. See Ryan Connolly, Note, *Balancing the Justices in Anti-Doping Law: The Need To Ensure Fair Athletic Competition Through Effective Anti-Doping Programs Vs. the Protection of Rights of Accused Athletes*, 5 VA. SPORTS & ENT. L.J. 161, 174 (2006) (“The complex nature of anti-doping efforts requires a carefully crafted legal system to accomplish the dual goals of ensuring fair sport through effective anti-doping measures and assuring equity to individual athletes.”).

Part IV evaluates the unique concerns raised by the biological passport, specifically the reliability of indirect biological-passport evidence and the fairness of finding cyclists guilty of doping based on this evidence alone. Part V provides recommendations that would allow antidoping authorities to address these concerns while continuing to utilize the biological passport as an antidoping control.

I. THE ANTIDOPING MOVEMENT IN INTERNATIONAL SPORT

International antidoping efforts are governed by private contracts¹⁸ and administered by a network of international and national organizations.¹⁹ Antidoping regulation in international sport is essentially “the enforcement of these private agreements.”²⁰ Numerous antidoping authorities enforce these regulations, including the International Olympic Committee (IOC), WADA, international federations (IFs), national governing bodies (NGBs), and the CAS. To enter into international competition, athletes must agree to be bound by the antidoping rules that govern their respective sports.²¹ For instance, professional cyclists agree to submit to in- and out-of-competition doping tests²² and to abide by sanctions if they are found guilty of doping violations.²³

A. *The IOC*

Antidoping efforts in international sport have traditionally been focused on the Olympic Movement.²⁴ The IOC is the “supreme authority of the Olympic Movement” and has ultimate control over

18. Michael Straubel, *Enhancing the Performance of the Doping Court: How the Court of Arbitration for Sport Can Do Its Job Better*, 36 LOY. U. CHI. L.J. 1203, 1259 (2005); Connolly, *supra* note 17, at 174.

19. Connolly, *supra* note 17, at 163.

20. *Id.* at 175.

21. UNION CYCLISTE INTERNATIONALE, UCI CYCLING REGULATIONS: PART 14: ANTI-DOPING (2011), available at <http://www.uci.ch/Modules/BUILTIN/getObject.asp?MenuId=&ObjTypeCode=FILE&type=FILE&id=NDc3MDk> (“Riders and other Persons accept these rules as a condition of participation and shall be bound by them.”); WORLD ANTI-DOPING AGENCY, *supra* note 2, at 17 (“Athletes or other Persons accept these rules as a condition of participation and shall be bound by these rules.” (emphasis omitted)).

22. *See, e.g.*, UNION CYCLISTE INTERNATIONALE, *supra* note 21, at 1–3 (outlining the parameters of these tests).

23. *See, e.g., id.* at 51–62 (describing the sanctions and consequences for doping violations).

24. Connolly, *supra* note 17, at 163.

antidoping regulation in all Olympic sports.²⁵ To be eligible for the Olympic Games, all IFs, national Olympic committees (NOCs), and NGBs must adhere to the IOC's rules.²⁶ The IOC created WADA and the CAS and designated them as the independent bodies responsible for administering antidoping efforts.

B. WADA and the World Anti-Doping Code

WADA is the international organization that governs antidoping efforts across all Olympic sports, including professional cycling.²⁷ WADA was born in the aftermath of the Festina affair, a major scandal at the 1998 Tour de France that revealed a widespread network of systematic doping in professional cycling.²⁸ The Festina affair underscored the need for an independent body to govern antidoping efforts in international sport.²⁹ As a result, the IOC founded WADA the following year.³⁰

WADA “promote[s], coordinate[s], and monitor[s] the fight against doping in sport in all its forms.”³¹ WADA serves a twofold purpose: (1) to protect the fundamental rights of athletes to participate in sport free of doping and “thus promote health, fairness and equality” for athletes worldwide, and (2) to “ensure harmonized, coordinated and effective antidoping programs at the international and national level with regard to detection, deterrence and prevention of doping.”³² To meet these goals, WADA administers the World Anti-Doping Program,³³ which comprises the World Anti-

25. INT'L OLYMPIC COMM., ANTI-DOPING RULES APPLICABLE TO THE GAMES OF THE XXIX OLYMPIAD, BEIJING 2008, at 3 (2008), available at http://www.olympic.org/Documents/Reports/EN/en_report_1316.pdf.

26. See, e.g., INT'L OLYMPIC COMM., OLYMPIC CHARTER 25 (2011), available at http://www.olympic.org/Documents/olympic_charter_en.pdf (“The statutes, practice and activities of the IFs within the Olympic Movement must be in conformity with the Olympic Charter, including the adoption and implementation of the World Anti-Doping Code.”).

27. *About WADA*, *supra* note 7.

28. See generally Samuel Abt, *Tour de France Faces Its Worst Crisis*, N.Y. TIMES, July 30, 1998, at C1 (detailing the controversy over drug testing during the 1998 Tour de France).

29. *A Brief History of Anti-Doping*, *supra* note 3.

30. *Id.*

31. *Frequently Asked Questions*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/Footer-Links/FAQ> (last updated Apr. 2010).

32. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 11.

33. See *World Anti-Doping Program*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/World-Anti-Doping-Program> (last updated Oct. 2010) (“The World Anti-Doping Program was developed and implemented to harmonize anti-doping policies and regulations within sport organizations and among governments.”).

Doping Code (Code),³⁴ International Standards,³⁵ and Model Rules and Guidelines.³⁶

The Code is the uniform set of antidoping rules that governs all Olympic sports, including professional cycling.³⁷ The Code formally defines doping³⁸ and describes the burden of proof, standard of proof, evidentiary standards,³⁹ and right to a fair hearing⁴⁰ applicable to all disciplinary proceedings for doping violations. The Olympic Charter requires that all organizations within the Olympic Movement adopt and implement the Code.⁴¹

34. WORLD ANTI-DOPING AGENCY, *supra* note 2.

35. See *International Standards*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/World-Anti-Doping-Program/Sports-and-Anti-Doping-Organizations/International-Standards> (last updated Oct. 2009) ("The [Code]. works in conjunction with five International Standards aimed at bringing harmonization among anti-doping organizations in various technical areas."). The International Standards include the Prohibited List, WORLD ANTI-DOPING AGENCY, THE 2011 PROHIBITED LIST (2010) [hereinafter WORLD ANTI-DOPING AGENCY, THE 2011 PROHIBITED LIST], available at http://www.wada-ama.org/Documents/World_Anti-Doping_Program/WADP-Prohibited-list/To_be_effective/WADA_Prohibited_List_2011_EN.pdf, which details the various prohibited substances and methods defined as doping under the Code. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 29–36.

36. See *Model Rules & Guidelines*, WORLD ANTI-DOPING AGENCY (May 2010), <http://www.wada-ama.org/en/World-Anti-Doping-Program/Sports-and-Anti-Doping-Organizations/Model-Rules--Guidelines> ("Model Rules, guidelines and protocols provide recommended solutions to stakeholders in different areas of anti-doping.").

37. See *World Anti-Doping Code*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/World-Anti-Doping-Program/Sports-and-Anti-Doping-Organizations/The-Code> (last updated May 2011) ("The Code is the core document that provides the framework for harmonized anti-doping policies, rules and regulations within sport organizations and among public authorities.").

38. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 18.

39. *Id.* at 26–28.

40. *Id.* at 48.

41. See *supra* note 26. To date, the Code has been formally adopted by all 26 IFs that participate in the Summer Olympics, all 7 IFs that participate in the Winter Olympics, 34 IFs that do not compete in the Olympics but are recognized by the IOC, *Code Acceptance: List of International Federations*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/Anti-Doping-Community/IFs/List-of-IFs> (last updated Jan. 2009), all 205 NOCs, *Code Acceptance: Olympic Movement*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/World-Anti-Doping-Program/Sports-and-Anti-Doping-Organizations/The-Code/Code-Acceptance/Olympic-Movement> (last updated Aug. 2011), and 130 national antidoping organizations, *Code Acceptance: Government-Funded Organizations*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/World-Anti-Doping-Program/Sports-and-Anti-Doping-Organizations/The-Code/Code-Acceptance/Government-funded-Organizations> (last updated Dec. 2009), as well as by a number of other organizations, *Code Acceptance: Outside the Olympic Movement*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/World-Anti-Doping-Program/Sports-and-Anti-Doping-Organizations/The-Code/Code-Acceptance/Outside-the-Olympic-Movement> (last updated July 2011).

C. IFs

IFs govern particular sports at the international level⁴² and administer international antidoping programs.⁴³ In this capacity, IFs initiate disciplinary proceedings for alleged doping violations and act as the prosecuting authority in these cases.⁴⁴ The UCI is the IF that governs the sport of cycling⁴⁵ and the body that directly administers cycling's biological passport.⁴⁶ The UCI has incorporated the Code into its own antidoping rules,⁴⁷ formally placing antidoping efforts in professional cycling under WADA's ultimate authority.⁴⁸

D. NGBs

NGBs manage their respective sports at the national level.⁴⁹ Each NGB is a member of its sport's IF and must adhere to the IF's antidoping rules and to the Code.⁵⁰ NGBs in professional cycling include the Italian Cycling Federation (FCI) and the Royal Spanish Cycling Federation (RFEC). These bodies adjudicate disciplinary proceedings in which the UCI accuses cyclists of doping violations.⁵¹ These proceedings are governed by the UCI's antidoping rules and by the Code.⁵²

E. The CAS

The CAS is international sport's highest court and the "exclusive arbitral tribunal for the binding adjudication of disputes" involving

42. Connolly, *supra* note 17, at 163.

43. Maureen A. Weston, *Doping Control, Mandatory Arbitration, and Process Dangers for Accused Athletes in International Sports*, 10 PEPP. DISP. RESOL. L.J. 5, 13 (2009).

44. *Id.* at 30.

45. *Mission Statement*, *supra* note 6.

46. *UCI Anti-Doping Programme*, UNION CYCLISTE INTERNATIONALE, <http://www.uci.ch/templates/UCI/UCI1/layout.asp?MenuId=MTUzNDc&LangId=1> (last visited Oct. 7, 2011).

47. See UNION CYCLISTE INTERNATIONALE, *supra* note 21 ("[T]he UCI Management Committee decided to accept the World Anti-Doping Code and to incorporate the Code in UCI's Regulations . . .").

48. Press Release, World Anti-Doping Agency, UCI Adopts Code (July 23, 2004), available at <http://www.wada-ama.org/en/News-Center/Articles/UCI-Adopts-Code>.

49. Connolly, *supra* note 17, at 163.

50. *Id.*

51. See UNION CYCLISTE INTERNATIONALE, *supra* note 21, at 46 (delineating the right to a fair hearing). NGBs may also choose to refer antidoping cases to an external hearing panel, such as an NOC tribunal. *Id.* at 47.

52. *Id.*

Olympic sports, including professional cycling.⁵³ The CAS's "most visible role" in the 1990s and 2000s has been arbitrating antidoping disputes.⁵⁴ WADA, IFs, and athletes may appeal antidoping decisions by NGBs to the CAS,⁵⁵ which then acts as the final arbiter with respect to doping violations.⁵⁶

II. THE EVOLUTION OF ANTIDOPING EFFORTS IN SPORT

Antidoping efforts have traditionally been premised on the direct detection of a prohibited substance in an athlete's blood or urine, typically through a positive doping test. Increasingly, however, antidoping authorities have explored new approaches to pursuing doping violations in the absence of positive doping tests.

A. *Traditional Antidoping Controls: Direct Detection Through Analytical Positive Findings*

Traditional antidoping efforts have been aimed at directly detecting prohibited substances.⁵⁷ WADA maintains a list of such banned substances,⁵⁸ including both exogenous⁵⁹ and endogenous⁶⁰

53. Weston, *supra* note 43, at 18.

54. Connolly, *supra* note 17, at 164.

55. See UNION CYCLISTE INTERNATIONALE, *supra* note 21, at 63–66 (outlining the procedure for appealing to the CAS). The CAS reviews the facts and law in such cases de novo. Weston, *supra* note 43, at 22.

56. Connolly, *supra* note 17, at 165; see also *Types of Disputes Submitted to the CAS*, COURT OF ARBITRATION FOR SPORT, <http://www.tas-cas.org/en/infogenerales.asp/4-3-239-1011-4-1-1/5-0-1011-3-0-0> (last visited Oct. 7, 2011) ("[Antidoping] disciplinary cases are generally dealt with in the first instance by the competent sports authorities, and subsequently become the subject of an appeal to the CAS, which then acts as a court of last instance.").

57. See UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 16 ("Before the introduction of the biological passport, the anti-doping fight used only direct methods of detection. A blood or urine sample was taken from a rider, then analysed to detect prohibited substances or highlight whether a doping method had been used (such as a blood transfusion). If the threshold of a prohibited substance was exceeded, or any illegal manipulations detected, sanctions were imposed."); WORLD ANTI-DOPING AGENCY, ATHLETE BIOLOGICAL PASSPORT OPERATING GUIDELINES AND COMPILATION OF REQUIRED ELEMENTS 3 (2010), available at http://www.wada-ama.org/Documents/Resources/Guidelines/WADA_ABP_OperatingGuidelines_EN_2.1.pdf ("The typical Doping Control approach [is] based on the detection of Markers of a substance or its Metabolites . . ." (emphasis omitted)).

58. WORLD ANTI-DOPING AGENCY, THE 2011 PROHIBITED LIST, *supra* note 35.

59. An exogenous substance is "not ordinarily capable of being produced by the body naturally," and an analytical positive finding of an exogenous substance at any level may signal a doping violation. *Id.* at 1.

60. An endogenous substance "is capable of being produced by the body naturally." *Id.* A finding that an endogenous substance exceeds a predetermined ratio may signal a doping

substances. Article 2.1 of the Code provides that the “Presence of a Prohibited Substance or its Metabolites or Markers in an Athlete’s Sample” constitutes a doping violation.⁶¹ Under Article 2.1, an athlete must test positive for a prohibited substance—a result known as an analytical positive finding—before being found guilty of committing a doping violation.⁶²

In the event of an analytical positive finding, the Code guarantees an athlete’s right to a fair hearing. Specifically, the Code provides as follows:

The [antidoping] hearing process shall respect the following principles:

- a timely hearing;
- a fair and impartial hearing panel;
- the right to be represented by counsel at the Person’s own expense; the right to be informed in a fair and timely manner of the asserted anti-doping rule violation;
- the right to respond to the asserted anti-doping rule violation and resulting Consequences;
- the right of each party to present evidence, including the right to call and question witnesses (subject to the hearing panel’s discretion to accept testimony by telephone or written submission);
- the Person’s right to an interpreter at the hearing, with the hearing panel to determine the identity, and responsibility for the cost, of the interpreter; and
- a timely, written, reasoned decision, specifically including an explanation of the reason(s) for any period of Ineligibility.⁶³

violation because it indicates that “the concentration of the substance in the specimen so deviates from the range of values normally found in humans that it is unlikely to be consistent with normal endogenous production.” Jessica K. Foschi, *A Constant Battle: The Evolving Challenges in the International Fight Against Doping in Sport*, 16 DUKE J. COMP. & INT’L L. 457, 471–72 (2006). Doping violations based on endogenous-substance ratios are a “hotly contested issue,” *id.* at 472, and raise a number of the same concerns as cycling’s biological passport.

61. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 19 (emphasis added) (emphasis omitted). This is the first doping violation enumerated in the Code. *Id.*

62. *Id.*

63. *Id.* at 48–49. Although these basic principles ensure athletes’ rights to a fair hearing, athletes are not afforded the same due process protections as are embodied in the Fourteenth Amendment. Meredith Lambert, *The Competing Justices of Clean Sport: Strengthening the Integrity of International Athletics While Affording a Fair Process for the Individual Athlete Under the World Anti-Doping Program*, 23 TEMP. INT’L & COMP. L.J. 409, 418–19 (2009).

In an analytical positive case, the antidoping authority has the burden of proving that the athlete has committed a doping violation.⁶⁴ The standard of proof in such a case is “whether the Anti-Doping Organization has established a doping violation to the *comfortable satisfaction* of the hearing panel bearing in mind the seriousness of the allegation which is made.”⁶⁵ According to the Code, this comfortable-satisfaction standard is “greater than a mere balance of probability but less than proof beyond a reasonable doubt.”⁶⁶ In other words, the “rigor [of this standard] lies somewhere between what is normally applied in private law and what is applied under public (penal or criminal) law.”⁶⁷

Analytical positive cases present relatively straightforward evidentiary issues⁶⁸ because the Code provides for strict liability in such cases.⁶⁹ Under the Code, each athlete has a “personal duty to ensure that no Prohibited Substance enters his or her body.”⁷⁰ A doping violation thus occurs “whenever a Prohibited Substance is found in an Athlete’s Sample,” regardless of whether the athlete “intentionally or unintentionally Used a Prohibited Substance or was negligent or otherwise at fault.”⁷¹ Therefore, a positive doping test alone will typically suffice to prove an athlete guilty of doping.⁷²

64. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 26.

65. *Id.* (emphasis added).

66. *Id.*

67. James A.R. Nafziger, *Circumstantial Evidence of Doping: BALCO and Beyond*, 16 MARQ. SPORTS L. REV. 45, 51 (2005).

68. Paul Greene, Case Note, *United States Anti-Doping Agency v. Montgomery: Paving a New Path to Conviction in Olympic Doping Cases*, 59 ME. L. REV. 149, 157 (2007).

69. WADA relied on the CAS’s reasoning in a previous antidoping arbitration to justify the use of the strict-liability standard in the Code. See *USA Shooting & Q. v. Union Internationale de Tir*, No. CAS 94/129, at 6 (Ct. of Arb. for Sport 1995), <http://jurisprudence.tas-cas.org/sites/CaseLaw/Shared%20Documents/129.pdf> (“It is true that a strict liability test is likely in some sense to be unfair in an individual case, such as that of Q., where the athlete may have taken medication as the result of mislabelling or faulty advice for which he or she is not responsible But it is also in some sense ‘unfair’ for an athlete to get food poisoning on the eve of an important competition. Yet in neither case will the rules of the competition be altered to undo the unfairness. Just as the competition will not be postponed to await the athlete’s recovery, so the prohibition of banned substances will not be lifted in recognition of its accidental absorption. The vicissitudes of competition, like those of life generally, may create many types of unfairness, whether by accident or the negligence of unaccountable persons, which the law cannot repair.”).

70. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 19 (emphasis omitted).

71. *Id.*

72. A doping violation in an analytical positive case is proven by “direct evidence, where a positive drug test will directly show that an athlete had a prohibited substance in [his] body.”

Although this strict-liability standard may appear harsh,⁷³ analytical positive cases also provide certain safeguards for accused athletes. For instance, an analytical positive finding generally requires that both an “A” and “B” sample of the athlete’s blood or urine show the presence of a prohibited substance.⁷⁴ This requirement protects against false positives and provides greater certainty that a doping violation has occurred.⁷⁵ Moreover, athletes have the opportunity to present affirmative evidence showing that the analytical positive finding resulted from procedural laboratory error rather than doping.⁷⁶ The Code, however, presumes the validity of tests conducted in WADA-accredited laboratories,⁷⁷ and it is extremely difficult for athletes to rebut this mandatory presumption.⁷⁸

The direct-detection approach has certain limitations.⁷⁹ For example, some prohibited substances—like synthetic erythropoietin (EPO), a hormone that enhances endurance by increasing oxygen in the blood, a process otherwise known as “blood doping”—can be

McLaren, *supra* note 14, at 9. The analytical positive finding “alone provide[s] sufficient evidence of the athlete’s guilt.” Greene, *supra* note 68, at 157.

73. In fact, one commentator argues that strict liability places an “insurmountable burden on the athlete.” Foschi, *supra* note 60, at 479.

74. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 20.

75. Testing both A and B samples provides “certainty regarding the integrity of testing methods and collection, since an adverse finding in the A sample should also appear in the B sample.” Bradley J. Schmalzer, *A Vicious Cycle: The Biological Passport Dilemma*, 70 U. PITT. L. REV. 677, 684 (2009). According to WADA, this procedure “helps confirm that an anti-doping rule violation has occurred and protects the rights of the athletes.” Press Release, World Anti-Doping Agency, WADA Clarifies B-Sample Procedure (Nov. 22, 2006), available at <http://www.wada-ama.org/en/News-Center/Articles/WADA-Clarifies-B-Sample-Procedure>.

76. See WORLD ANTI-DOPING AGENCY, *supra* note 2, at 27 (“The Athlete or other Person may . . . establish[] that a departure from the International Standard for Laboratories occurred which could reasonably have caused the Adverse Analytical Finding.” (emphasis omitted)).

77. See *id.* (“WADA-accredited laboratories are presumed to have conducted Sample analysis and custodial procedures in accordance with the International Standard for Laboratories.” (emphasis omitted)).

78. Schmalzer, *supra* note 75, at 684.

79. See UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 16 (“Indirect detection is a lot more efficient than direct detection because the effects of using banned substances are retained for a lot longer than the period during which it is possible to discover traces of the substances in the body.”); WORLD ANTI-DOPING AGENCY, *supra* note 57, at 3 (“[Traditional antidoping tests have] limitations when an Athlete may be using substances on an intermittent and low-dose basis which may therefore go undetected under even the most robust Out-of-Competition Doping Control program.” (emphasis omitted)); Wozny, *supra* note 13, at 79 (describing the limitations of traditional doping tests).

directly detected in the body only for a few days.⁸⁰ Other prohibited substances may be impossible to detect using available doping tests.⁸¹ Recognizing these limitations, antidoping authorities have begun to pursue alternatives to direct detection.

B. New Antidoping Approaches: Nonanalytical Positive Cases

Antidoping authorities have increasingly explored newer approaches to proving doping violations even in the absence of positive doping tests. These efforts are known broadly as nonanalytical positive cases.⁸² The right to a fair hearing, the burden of proof, and the standard of proof are the same in nonanalytical positive cases as in analytical positive cases.⁸³ Because nonanalytical positive cases do not involve a positive doping test, however, the strict-liability standard does not apply.⁸⁴ The relevant antidoping authority has the burden of proving that a doping violation has occurred through circumstantial—indirect—evidence or through direct evidence other than an analytical positive finding.⁸⁵ These cases present challenges relating to the sufficiency of such evidence and the fairness of finding an athlete guilty of doping in the absence of a positive doping test.

The Code specifically provides that an athlete may be found guilty of doping “where there is evidence that a doping violation occurred but where there is no positive doping control test.”⁸⁶ For

80. Susan Gilbert, *The Biological Passport*, HASTINGS CENTER REP., Mar.–Apr. 2010, at 18, 18.

81. *Id.*

82. McLaren, *supra* note 14, at 11.

83. See *supra* notes 63–67 and accompanying text.

84. Richard H. McLaren, *An Overview of Non-Analytical Positive & Circumstantial Evidence Cases in Sports*, 16 MARQ. SPORTS L. REV. 193, 194 (2006). In other words, in nonanalytical positive cases, there is “no positive drug test, no presumption of fault [on the part of the athlete], and therefore no presumption [of guilt] for the athlete to rebut.” Lambert, *supra* note 63, at 423.

85. McLaren, *supra* note 84, at 194. A nonanalytical positive case may involve “anything other than a positive laboratory test.” Foschi, *supra* note 60, at 481.

86. *World Anti-Doping Code*, *supra* note 37. The potential scope of nonanalytical positive cases is “really quite broad.” Cameron A. Myler, *Resolution of Doping Disputes in Olympic Sport: Challenges Presented by “Non-Analytical” Cases*, 40 NEW ENG. L. REV. 747, 749 (2006) (noting that nonanalytical positive cases could include “refusing to submit to drug testing, admitting to the use of a substance, tampering with any part of the drug testing process, missing three tests within an eighteen month period . . . , possessing substances, trafficking, administering substances to other athletes . . . , encouraging, aiding, abetting, covering up, or any other type of complicity involving an anti-doping rule violation”).

instance, Article 2.2 of the Code provides that the “Use or Attempted Use by an Athlete of a Prohibited Substance or a Prohibited Method” constitutes a doping violation.⁸⁷ Whereas an Article 2.1 violation requires an analytical positive finding,⁸⁸ an Article 2.2 violation may instead “be established by any *reliable means*.”⁸⁹ Such means may include “admissions by the Athlete, witness statements, documentary evidence, conclusions drawn from longitudinal profiling, or other analytical information which does not otherwise satisfy all the requirements to establish ‘Presence’ of a Prohibited Substance under Article 2.1.”⁹⁰

A number of nonanalytical positive cases arose in the wake of the Bay Area Laboratory Co-Operative (BALCO) doping scandal.⁹¹ For instance, in *United States Anti-Doping Agency v. Collins*,⁹² the U.S. Anti-Doping Agency (USADA)⁹³ charged track-and-field athlete Michelle Collins with using a variety of prohibited substances provided by BALCO, including EPO, testosterone/epitestosterone (T/E) cream, and tetrahydrogestrinone (THG).⁹⁴ Collins had never tested positive for a prohibited substance.⁹⁵ Nevertheless, the North American CAS⁹⁶ relied exclusively on circumstantial evidence and found “that Collins was guilty of doping through the use of prohibited substances and techniques.”⁹⁷

87. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 21 (emphasis omitted). This is the second doping violation enumerated under the Code. *Id.*

88. *See supra* notes 61–62 and accompanying text.

89. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 21 (emphasis added).

90. *Id.*

91. McLaren, *supra* note 14, at 10.

92. U.S. Anti-Doping Agency v. Collins, AAA No. 30 190 00658 04 (N. Am. Ct. of Arb. for Sport 2004), http://www.usada.org/files/active/arbitration_rulings/AAA%20CAS%20Decision%20-%20Collins.pdf.

93. USADA is the national antidoping organization that governs Olympic sports in the United States. *About USADA*, U.S. ANTI-DOPING AGENCY, <http://www.usada.org/about> (last visited Oct. 7, 2011).

94. *Collins*, AAA No. 30 190 00658 04, at 2–5.

95. *Id.* at 2.

96. The North American CAS operates as the American Arbitration Association (AAA-CAS). Straubel, *supra* note 18, at 1205.

97. *Collins*, AAA No. 30 190 00658 04, at 2. The *Collins* panel initially explained that “USADA [was seeking] for the first time to sanction an athlete who ha[d] not tested positive in any of her in-competition or out-of-competition drug tests” and thus that the case presented “issues that ha[d] not previously had to be decided by Arbitral Tribunals.” *Id.* at 1. The panel, however, found that “the straightforward application of legal principles to essentially undisputed facts [led] to a clear resolution of this matter.” *Id.*

The *Collins* panel relied primarily upon two sets of indirect evidence of doping: (1) emails from Collins in which she admitted to using prohibited substances and techniques; and (2) blood- and urine-test results indicating fluctuations in Collins's hematocrit and T/E ratios,⁹⁸ which “together provide[d] solid evidence of a pattern of doping.”⁹⁹ The panel held that these two categories of circumstantial evidence “independently and collectively” proved Collins's use of prohibited substances.¹⁰⁰

In a subsequent nonanalytical positive case, *United States Anti-Doping Agency v. M.*,¹⁰¹ USADA charged track-and-field athlete Tim Montgomery with using a variety of prohibited substances provided by BALCO.¹⁰² Similarly to Collins, Montgomery had never tested positive for any prohibited substance. Instead, USADA relied exclusively on other direct and circumstantial evidence to argue that Montgomery had committed a doping violation.¹⁰³ The *M.* panel ultimately found Montgomery guilty of doping based on witness Kelli White's direct testimony that Montgomery had admitted his use of prohibited substances to her.¹⁰⁴ Nevertheless, the panel declined to “determine whether the mass of other evidence”—including fluctuations in Montgomery's biological variables—was also conclusive evidence of doping.¹⁰⁵

98. *Id.* at 2, 18–24.

99. *Id.* at 2. Because this case arose before the adoption of the Code, the *Collins* panel applied the beyond-a-reasonable-doubt standard, *id.*, rather than the comfortable-satisfaction standard mandated under the Code, WORLD ANTI-DOPING AGENCY, *supra* note 2, at 26.

100. *Collins*, AAA No. 30 190 00658 04, at 16. With respect to the blood and urine tests specifically, the *Collins* panel found that “[d]oping is the only potential explanation for the extreme variations in both hematocrit levels and T/E ratios.” *Id.* at 24. According to the panel, the fluctuations in Collins's hematocrit levels proved that Collins had used EPO, whereas the variations in her T/E levels could “only be explained by the illegal use of [testosterone/epitestosterone] cream.” *Id.* at 22. The panel also noted that “Collins did not present any expert's testimony or any other evidence to provide an alternative explanation of these test results.” *Id.* at 25.

101. U.S. Anti-Doping Agency v. M., No. CAS 2004/O/645 (Ct. of Arb. for Sport 2005), <http://jurisprudence.tas-cas.org/sites/CaseLaw/Shared%20Documents/645.pdf>.

102. *Id.* at 1.

103. *Id.* For example, USADA presented fluctuations in biological variables in Montgomery's blood and urine as circumstantial evidence of an antidoping violation. *Id.*

104. The *M.* panel was “unanimously of the view that Mr. Montgomery in fact admitted his use of prohibited substances to Ms. White.” *Id.* at 17. The panel characterized this admission as “uncontroverted evidence of . . . a direct and compelling nature.” *Id.* at 20.

105. *Id.* at 2.

These and other nonanalytical positive cases have raised new questions¹⁰⁶ regarding the reliability of such evidence and the fairness of finding an athlete guilty of doping in the absence of a positive doping test.¹⁰⁷ Whereas analytical positive cases involve relatively straightforward evidentiary issues,¹⁰⁸ nonanalytical positive cases present more difficult challenges. Because strict liability does not apply, nonanalytical positive cases turn on the “value and weight of the circumstantial evidence and the standard of proof that will be applied to evaluate this evidence.”¹⁰⁹ Unfortunately, there has been “little guidance regarding . . . how much [evidence] is enough to convict an athlete of a doping offense” in the absence of a positive doping test.¹¹⁰ Although nonanalytical positive cases may provide a valuable “new tool in the fight against doping,”¹¹¹ it is also important to balance the interest in conducting this fight with the fundamental rights of accused athletes.¹¹²

III. CYCLING’S BIOLOGICAL PASSPORT: A NEW COURSE IN THE RACE AGAINST DOPING IN SPORT

Cycling’s biological passport marks a departure from traditional antidoping efforts and signals an aggressive new approach to pursuing nonanalytical positive cases.¹¹³ The biological passport is an

106. Myler, *supra* note 86, at 751–52; *see also* Nafziger, *supra* note 67, at 47 (encouraging “critical thinking about the alternatives to a reliance on hard, laboratory evidence” in nonanalytical positive cases).

107. Nafziger, *supra* note 67, at 47 (“Arguably, the circumstantial nature of the evidence, because of its indirectness, may be unreliable and unfair.”).

108. *See supra* notes 68–72 and accompanying text.

109. McLaren, *supra* note 84, at 194–95.

110. Foschi, *supra* note 60, at 481. Unfortunately, the *Collins* and *M.* decisions provided “virtually no guidance on what must be proven in an entirely circumstantial evidence case involving a non-analytical positive.” McLaren, *supra* note 84, at 212.

111. McLaren, *supra* note 14, at 11.

112. *See* Schmalzer, *supra* note 75, at 700 (“[A]nti-doping organizations must bear in mind that for every rule and new testing method imposed on athletes, the rights of those same athletes are curtailed.”).

113. This characterization is somewhat of an oversimplification. In fact, antidoping organizations have long employed methods of indirect detection in addition to methods of direct detection. For instance, WADA explicitly authorizes the monitoring of T/E ratios to indirectly detect the use of prohibited substances. WORLD ANTI-DOPING AGENCY, GUIDELINE: REPORTING AND MANAGEMENT OF ELEVATED T/E RATIOS 3 (2006), available at http://www.wada-ama.org/Documents/Resources/Guidelines/WADA_Guidelines_ReportManagementElevatedTERatios_EN.pdf. In many ways, cycling’s biological passport is simply a variation on earlier, indirect antidoping tests, such as the T/E ratio. Moreover, many of the criticisms levied against the T/E ratio apply with similar force to cycling’s biological passport. *See, e.g.*, James E.

individual, electronic profile that collates various biological parameters in a cyclist's blood and urine.¹¹⁴ Using these data, antidoping authorities monitor an individual cyclist's natural biological variables for fluctuations that are thought to indirectly reveal doping.¹¹⁵ Based on this analysis, the UCI may decide to initiate disciplinary proceedings against a cyclist for doping.¹¹⁶

Cycling's biological passport is therefore premised on a theory of indirect detection.¹¹⁷ The biological passport "doesn't follow products, but the athlete," making it unnecessary to develop a new test for every prohibited substance or method of doping.¹¹⁸ Instead of relying on a positive doping test or other direct or circumstantial evidence of doping, the UCI may initiate antidoping proceedings against a cyclist solely on the basis of inferences drawn from fluctuations in that cyclist's biological variables. Although Pat McQuaid, UCI president, heralded this approach as "a new and historic step in the fight against doping,"¹¹⁹ this method raises serious concerns.

A. *The Genesis of Cycling's Biological Passport*

WADA initially conceived of the biological passport in 2002.¹²⁰ In January 2008, the UCI became the first IF to implement a biological-

Coleman, Jr. & Joshua M. Levine, *The Burden of Proof in Endogenous Substance Cases: A Masking Agent for Junk Science*, in *DOPING AND ANTI-DOPING POLICY IN SPORT: ETHICAL, LEGAL AND SOCIAL PERSPECTIVES* 27, 32 (Mike McNamee & Verner Møller eds., 2011) (noting "serious scientific uncertainty about the validity of the [T/E] ratio as a proxy for the exogenous use of testosterone"). Nevertheless, antidoping organizations, commentators, and the media continue to speak in terms of "traditional direct detection" versus "indirect detection under the biological passport." Wozny, *supra* note 13, at 79.

114. *Questions & Answers on the Athlete Biological Passport*, WORLD ANTI-DOPING AGENCY, <http://www.wada-ama.org/en/Science-Medicine/Athlete-Biological-Passport/Questions-Answers> (last updated Dec. 2009).

115. *See supra* note 15.

116. UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 20.

117. *Id.* at 16 ("With the biological passport, the direct detection of substances is not the primary focus, but rather the effect of these substances on the body. . . . This is called indirect detection.").

118. Jamey Keaton, *WADA Joins Cycling Body in Support of Latest Anti-Doping Plan*, ASSOCIATED PRESS, Oct. 23, 2007, available at Factiva, Doc. No. APRS000020071023e3an0031u.

119. Julien Pretot, *McQuaid Hails Historic Step in Fight Against Doping*, REUTERS, Oct. 23, 2007, available at Factiva, Doc. No. LBA000020071023e3an000o0 (quoting McQuaid) (internal quotation mark omitted).

120. *Questions & Answers*, *supra* note 114. As has been the case with many antidoping initiatives, the program did not gain momentum until a major doping scandal several years later. At the 2006 Olympics in Turin, a dozen cross-country skiers were suspended from competition

passport program.¹²¹ The UCI formally incorporated the biological passport into its antidoping rules in June 2008, enabling the antidoping authority to begin sanctioning cyclists for doping on the basis of indirect biological-passport evidence.¹²²

Under cycling's biological passport, professional cyclists may be required to submit to mandatory blood and urine tests at any time, both in and out of competition.¹²³ In the first five months of 2008, the UCI took 3,185 blood and urine samples from more than 850 professional cyclists.¹²⁴ The UCI then analyzed these initial samples to create the longitudinal blood and steroid profiles in each cyclist's biological passport.¹²⁵ These profiles established the cyclist's individual parameters for various biological variables,¹²⁶ such as hemoglobin, reticulocytes, and hematocrit, all of which are found in the blood.¹²⁷

Using these profiles, the UCI can compare an individual cyclist's subsequent blood and urine samples against the historical parameters contained in that cyclist's biological passport.¹²⁸ Based on this comparison, the UCI may conclude that fluctuations in a cyclist's blood profile are abnormal and likely indicate prohibited blood

because of excessive levels of hemoglobin in their blood. Lynn Zinser & Juliet Macur, *Pomp and Unsettling Circumstances Open Games*, N.Y. TIMES, Feb. 11, 2006, at D1. Although these elevated levels may have indicated blood doping, the athletes maintained that their hemoglobin levels were natural. *Id.* Following this episode, WADA financed a research program to explore the possibility of developing a biological passport. Macur, *supra* note 8.

121. *Information on the Biological Passport*, UNION CYCLISTE INTERNATIONALE (Dec. 21, 2007), <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?MenuId=&id=NTQzOA>. The UCI first announced these plans in October 2007. Macur, *supra* note 8.

122. Press Release, Union Cycliste Internationale, UCI Management Committee Meeting in Denmark (June 13, 2008), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=NTg0Nw>. The UCI also adopted a no-start rule, meaning that a cyclist could be prevented from starting a race for fifteen days based on his biological passport. *UCI Votes To Incorporate Biological Passport in Fight Against Doping*, ASSOCIATED PRESS, June 13, 2008, available at Factiva, Doc. No. APRS000020080613e46d008gc.

123. Cyclists are required to provide the UCI with a detailed schedule of their whereabouts through the Anti-Doping Administration & Management System (ADAMS) program. UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 19. This requirement enables the UCI to test cyclists at any time. *Id.*

124. *Cycling's Governing Body Prepares New 'No-Start' Anti-Doping Rule*, ASSOCIATED PRESS, June 6, 2008, available at Factiva, Doc. No. APRS000020080606e46600c4o.

125. UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 15.

126. *Id.* at 16.

127. *Biological Passport—Questions/Answers*, *supra* note 13.

128. UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 18–19.

manipulation, such as blood doping.¹²⁹ Similarly, the UCI may determine that irregularities in a cyclist's steroid profile reveal that the cyclist has taken exogenous steroids, such as testosterone, that may not have been detected by traditional tests.¹³⁰

Biological passports are monitored using a two-step process. First, each blood or urine sample is analyzed and then applied against a statistical model that uses Bayesian inference techniques to compare the individual sample against the cyclist's historical parameters.¹³¹ If there are fluctuations in a cyclist's biological parameters that exceed the thresholds set by the statistical model, the model makes the initial determination that the cyclist is likely to have committed a doping violation.¹³² This determination is based not on a "true probability of doping," but instead on "how the profile differs from what is expected in clean athletes."¹³³

Second, any biological-passport data that might indicate doping are submitted to a UCI panel of three antidoping experts for further review.¹³⁴ These experts interpret the data to determine whether the fluctuations in a cyclist's biological variables indirectly show that the cyclist has committed a doping violation.¹³⁵ The panel then issues a recommendation as to whether the UCI should take formal action, such as initiating disciplinary proceedings against the cyclist for doping.¹³⁶

129. *Id.* at 16.

130. *Id.* The UCI has not yet fully implemented the steroid profile. Thus far, it has relied exclusively on blood-profile fluctuations in prosecuting all biological-passport cases. *Biological Passport—Questions/Answers*, *supra* note 13.

131. Union Cycliste Internationale, *The Biological Passport: A New Element in "100% Against Doping,"* ASS'N OF NAT'L ANTI-DOPING ORGS., 20–21 (Mar. 31, 2008), <http://www.anado.org/documents/UCI.pdf>. The Bayesian model makes a "statistical inference in which evidence or observations are used to update or to newly infer the probability that a hypothesis [of doping] may be true." *Id.* at 21 (emphasis omitted).

132. *The Athlete Biological Passport (ABP)*, LABORATOIRE SUISSE D'ANALYSE DU DOPAGE, http://www.doping.chuv.ch/en/lad_home/lad-prestations-laboratoire/lad-prestations-laboratoire-passeport.htm (last updated Nov. 16, 2009). Typically, this model uses a specificity of 99 percent. *Id.*

133. *Id.* (internal quotation marks omitted).

134. Ryan, *supra* note 1.

135. *The Athlete Biological Passport*, *supra* note 132.

136. UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 20.

The UCI has discretion as to whether to initiate such proceedings.¹³⁷ If the UCI opts to pursue enforcement on the basis of indirect biological-passport evidence, it will provisionally suspend the accused cyclist from competition and formally request that the relevant NGB sanction the cyclist for doping.¹³⁸ The accused cyclist has the right to a hearing before his NGB.¹³⁹ At the conclusion of that proceeding, the NGB will determine whether the cyclist is guilty of doping and, if necessary, will impose sanctions.¹⁴⁰ WADA, the UCI, and the accused cyclist then have the right to appeal the NGB's decision to the CAS,¹⁴¹ which will render a final decision.¹⁴²

B. The First Cases Arising Under Cycling's Biological Passport

In 2009 and 2010, the UCI opened the first antidoping cases based on cycling's biological passport. The UCI initiated two waves of disciplinary proceedings against a total of eight cyclists suspected of doping solely on the basis of fluctuations in their biological passports. In these cases, the cyclists' NGBs initially disagreed with one another over the reliability of such evidence in proving doping violations. In the four cases that were appealed, however, CAS panels consistently upheld the doping sanctions. The CAS therefore signaled a broad willingness to accept indirect biological-passport evidence as proof of doping.

1. *NGBs Split on the Reliability of Cycling's Biological Passport.* NGBs initially split in antidoping cases arising under cycling's biological passport. In the first wave of proceedings involving indirect biological-passport evidence, NGBs appeared to signal their broad support for the program by unanimously upholding doping sanctions. In the second wave of proceedings arising under the program, however, NGBs voiced concerns over the reliability of indirect biological-passport evidence and subsequently declined to uphold doping sanctions based on such evidence alone.

137. See UNION CYCLISTE INTERNATIONALE, *supra* note 21, at 41 (“[T]he UCI shall conclude whether an anti-doping violation has apparently been committed.”); *id.* at 42 (“[T]he UCI may reopen the case on its own initiation.”).

138. See *infra* notes 150–156 and accompanying text.

139. See *supra* note 63 and accompanying text.

140. See *supra* notes 23, 51 and accompanying text.

141. See *supra* note 55 and accompanying text.

142. See *supra* note 56 and accompanying text.

In the first wave of antidoping proceedings, NGBs unanimously upheld the UCI's sanctions. In June 2009, the UCI provisionally suspended five cyclists—Spaniards Igor Astarloa Ascasibar, Ruben Lobato Elvira, and Ricardo Serrano Gonzalez and Italians Pietro Caucchioli and Francesco De Bonis—on the basis of “information provided by the blood profile in [the cyclists'] biological passports.”¹⁴³ Subsequently, the UCI formally requested that the Spanish and Italian NGBs open disciplinary proceedings against the five accused cyclists.¹⁴⁴ The cyclists vigorously maintained their innocence, arguing that they had not tested positive for any prohibited substances.¹⁴⁵ Although the cyclists were not major names in the sport,¹⁴⁶ the UCI called the announcement a “very important step in the battle against doping”¹⁴⁷ and a “significant breakthrough” for the biological passport.¹⁴⁸ The cyclists faced minimum two-year bans from their NGBs, but the UCI announced that it would seek four-year bans in an effort to demonstrate its confidence in the strength of the cases.¹⁴⁹

The Italian and Spanish NGBs ultimately found all five cyclists guilty of doping. In May 2010, De Bonis became the first cyclist to be sanctioned for a doping violation based solely on indirect biological-passport evidence when the National Anti-Doping Tribunal of the Italian Anti-Doping Department (CONI) levied a two-year suspension and a €13,000 fine against him.¹⁵⁰ The UCI emphasized the

143. Press Release, Union Cycliste Internationale, Commencement of First Disciplinary Proceedings on the Basis of the Biological Passport (June 17, 2009), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=NjM5OA>.

144. Juliet Pretot, *UCI Disciplines Five over Biological Passport*, REUTERS, June 17, 2009, available at Factiva, Doc. No. LBA0000020090617e56h0010v.

145. For example, De Bonis insisted, “All the tests I have done throughout the year, including the Giro d'Italia, have been all negative. . . . [A]ll of my samples taken at home . . . were all negative.” Gregor Brown, *UCI Names First Five Biological Passport Violators*, CYCLING NEWS (June 17, 2009, 11:00 AM), <http://www.cyclingnews.com/news/uci-names-first-five-biological-passport-violators> (quoting De Bonis) (internal quotation marks omitted).

146. Pretot, *supra* note 144.

147. Press Release, Union Cycliste Internationale, *supra* note 143.

148. Richard Moore, *UCI 'Blood Passports' Investigation Names Doping Suspects*, GUARDIAN (June 17, 2009, 15:59 EDT), <http://www.guardian.co.uk/sport/2009/jun/17/cycling-drugs-riders-named-uci>.

149. *UCI Calls for Doping Charges Against 5 Riders*, ASSOCIATED PRESS, June 17, 2009, available at Factiva, Doc. No. APRS000020090617e56h001ja.

150. Press Release, Union Cycliste Internationale, Biological Passport: First Sanction (May 27, 2010), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=Njg5Mw>.

“historic importance of this first judgment under the scope of the biological passport” program.¹⁵¹

Subsequently, in June 2010, the CONI tribunal imposed a two-year ban on Caucchioli.¹⁵² Then, the Disciplinary Commission of the Spanish RFEC announced a two-year suspension and a €23,100 fine for Serrano in June 2010¹⁵³ and a two-year ban for Lobato in July 2010.¹⁵⁴ Finally, the RFEC tribunal levied a two-year suspension and a €35,000 fine against Astarloa in December 2010,¹⁵⁵ despite the fact that the cyclist had retired from the sport the previous year.¹⁵⁶ These initial decisions appeared to signal the Italian and Spanish NGBs’ willingness to accept indirect biological-passport evidence as proof of doping.

In the second wave of antidoping proceedings, however, multiple NGBs declined to impose doping sanctions and instead questioned the scientific and legal validity of indirect biological-passport evidence. In May 2010, the UCI provisionally suspended three cyclists—Italian Franco Pellizotti, Spaniard Jesus Rosendo Prado, and Slovenian Tadej Valjavec—and requested that their respective NGBs initiate disciplinary proceedings against them.¹⁵⁷ The cyclists

151. *Id.*

152. Press Release, Union Cycliste Internationale, Biological Passport: Pietro Caucchioli Sanctioned (June 3, 2010), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=NjkwOA>.

153. In addition to fluctuations in his biological-passport variables, Serrano was found guilty of doping based on a later analytical positive finding of prohibited recombinant EPO (CERA) in his blood. Press Release, Union Cycliste Internationale, Biological Passport: Ricardo Serrano Gonzalez Sanctioned (June 17, 2010), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=NjkyMw>.

154. Press Release, Union Cycliste Internationale, Biological Passport: Ruben Lobato Sanctioned (July 27, 2010), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=Njk3MQ>.

155. Press Release, Union Cycliste Internationale, Biological Passport: Igor Astarloa Askasibar Sanctioned (Dec. 1, 2010), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=NzE1NA>.

156. Astarloa was exasperated, saying, “It seems absurd to me. . . . [E]ven when you’re retired, they don’t leave you in peace. I could say I don’t care, because I’m no longer a cyclist . . . , but . . . it’s unjust. They controlled me a thousand time [*sic*], any hour, any place, and I was never positive.” *Astarloa Calls Sanctions “Absurd and Ridiculous,”* CYCLING NEWS (Dec. 2, 2010, 2:13 PM), <http://www.cyclingnews.com/news/astarloa-calls-sanctions-absurd-and-ridiculous> (quoting Astarloa) (internal quotation marks omitted).

157. Press Release, Union Cycliste Internationale, Commencement of Disciplinary Proceedings on the Basis of the Biological Passport (May 3, 2010), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=NjM5OA>.

vehemently denied any wrongdoing.¹⁵⁸ Pellizotti was the first prominent cyclist accused of a doping violation based on indirect biological-passport evidence, and his suspension was viewed as signaling that the UCI was finally getting “serious about rooting out dopers.”¹⁵⁹

In July 2010, a disciplinary panel of Slovenia's National Anti-Doping Commission (NADC) became the first NGB to question the reliability of indirect biological-passport evidence when the panel declined to impose doping sanctions against Valjavec.¹⁶⁰ In its decision, the NADC panel broadly rejected evidence from Valjavec's biological passport, finding that his profile provided insufficient proof of prohibited blood doping.¹⁶¹ Instead, the panel accepted Valjavec's argument that his biological-passport anomalies could have been caused by a variety of physiological factors other than blood doping, such as bleeding due to a stomach ulcer, training at high altitudes and in a hypobaric chamber, and corticoid treatment following a wasp sting.¹⁶² Specifically, the NADC panel found that “the statistical methods adopted by the biological passport cannot demonstrate the use of doping techniques but only evidence eventual unusual value[s] that could be explained by physiological origins.”¹⁶³ Moreover, the NADC panel held that the UCI had “failed to prove that the model of the biological passport had been used correctly and that it factored in variables, such as the type of instrument and altitude at which

158. Valjavec was stunned by the announcement, saying, “I can't believe how it is possible that the system does not work and that this can happen.” Susan Westemeyer, *Valjavec Claims Innocence in Biological Passport Case*, CYCLING NEWS (May 4, 2010, 2:30 PM), <http://www.cyclingnews.com/news/valjavec-claims-innocence-in-biological-passport-case> (quoting Valjavec) (internal quotation marks omitted).

159. Juliet Macur, *Blood Profile Is Foundation for Barring of Cyclist*, N.Y. TIMES, May 8, 2010, at D3. Pellizotti's Team Liquigas fired back, arguing that “[t]he evidence which has been presented [through the biological passport] does not seem to scientifically prove with certainty any improper conduct by the athlete.” *Id.* (quoting a statement by Team Liquigas) (internal quotation mark omitted).

160. *Cyclist Valjavec Cleared of Doping Charges*, SLOVN. PRESS AGENCY (July 29, 2010, 12:42 PM), <http://www.sta.si/en/vest.php?s=a&t=0&id=1539082>.

161. *Id.*

162. Stephen Farrand, *UCI Takes the Tadej Valjavec Case to the Court of Arbitration*, CYCLING NEWS (Sept. 18, 2010, 11:11 AM), <http://www.cyclingnews.com/news/uci-takes-the-tadej-valjavec-case-to-the-court-of-arbitration>.

163. *Id.*

Valjavec had trained.”¹⁶⁴ As a result, the NADC panel declined to impose doping sanctions against Valjavec.¹⁶⁵

In October 2010, a CONI tribunal likewise rejected indirect biological-passport evidence and declined to impose doping sanctions against Pellizotti. Pellizotti maintained his innocence before the CONI panel, and several hematological experts testified on his behalf.¹⁶⁶ Dr. Roberto Corsetti, Pellizotti’s Team Liquigas doctor, testified that Pellizotti’s biological-passport fluctuations could be explained by natural causes, including altitude training, that the “math formula [of the biological passport] does not take into consideration.”¹⁶⁷ Dr. Giancarlo Isacchi, an independent expert witness for the CONI tribunal, similarly argued that anomalies in Pellizotti’s biological passport did not yield “a significant probability” that Pellizotti had engaged in doping.¹⁶⁸ In perhaps a surprising change of course from its pair of decisions only a few months earlier,¹⁶⁹ the CONI panel ultimately held that the evidence from Pellizotti’s biological passport did not establish “a sufficient probability of guilt” of doping.¹⁷⁰ As a result, the panel dismissed the UCI’s case for lack of evidence¹⁷¹ and fined the UCI €5,000 in court costs.¹⁷² Following the decision, Pellizotti announced that he planned to seek €200,000 in damages from the UCI.¹⁷³

164. *Cyclist Valjavec Cleared of Doping Charges*, *supra* note 160.

165. *Id.*

166. Gregor Brown, *Pellizotti’s Biological Passport Lacked Certainty, Says Expert*, CYCLING WEEKLY (Oct. 22, 2010), <http://www.cyclingweekly.co.uk/news/latest/504199/pellizotti-s-biological-passport-lacked-certainty-says-expert.html>.

167. *Id.* (alteration in original).

168. *Id.*

169. *See supra* notes 150–152 and accompanying text.

170. Andrew Dampf, *Italian Cyclist Franco Pellizotti Cleared of Doping in Biological Passport Case*, ASSOCIATED PRESS, Oct. 21, 2010, available at Factiva, Doc. No. APRS000020101021e6al001am; *see also Italian Cyclist Cleared in Suspected Drug Case*, AGENCE FRANCE-PRESSE, Oct. 21, 2010, available at Factiva, Doc. No. AFPR000020101021e6al006n3 (reporting that the court had held that a “sufficiently high level of probability of guilt wasn’t established” and had “absolve[d] the rider of the charge”).

171. *Italian Cyclist Cleared in Suspected Drug Case*, *supra* note 170.

172. *Banned Cyclist Pietro Caucchioli To Challenge Validity of UCI’s Biological Passport*, VELONEWS (Oct. 26, 2010, 10:40 AM UTC), http://velonews.competitor.com/2010/10/news/banned-cyclist-pietro-caucchioli-to-challenge-validity-of-ucis-biological-passport_147751.

173. *Cyclist Pellizotti Suing UCI for Damages*, ASSOCIATED PRESS, Jan. 6, 2011, available at Factiva, Doc. No. APRS000020110106e716001hy.

Finally, Rosendo never faced disciplinary proceedings for his alleged doping violation.¹⁷⁴ Rosendo's Andaluca-Cajasur team announced that the irregularities in the cyclist's biological passport had likely been caused by abundant bleeding due to a hemorrhoid.¹⁷⁵ As a result, the RFEC declined the UCI's request to open disciplinary proceedings against Rosendo.¹⁷⁶ Collectively, these decisions cast doubt on the future of cycling's biological passport.¹⁷⁷

2. *The CAS Accepts Indirect Biological-Passport Evidence.*

Whereas NGBs initially disagreed over the reliability of cycling's biological passport, the CAS subsequently signaled a broad willingness to accept indirect biological-passport evidence by upholding doping sanctions against cyclists. The CAS heard appeals in four of the initial eight biological-passport cases.¹⁷⁸ Caucchioli became the first cyclist to challenge the validity of the biological-passport program before a CAS panel in December 2010.¹⁷⁹ CAS panels also heard appeals in the Valjavec,¹⁸⁰ De Bonis,¹⁸¹ and Pellizzotti¹⁸² cases in early 2011. In each case, the CAS panel ultimately upheld the imposition of doping sanctions based on indirect biological-passport evidence.

In March 2011, the CAS found both Caucchioli and Pellizzotti guilty of doping based on indirect biological-passport evidence

174. Hedwig Kröner, *Valjavec Cleared by Slovenian Anti-Doping Agency*, CYCLING NEWS (July 30, 2010, 4:11 PM), <http://www.cyclingnews.com/news/valjavec-cleared-by-slovenian-anti-doping-agency>.

175. *Id.*

176. *Id.*

177. Juliet Macur, *Ban Based on Blood Profile Is Upheld*, N.Y. TIMES, Mar. 9, 2011, at B16 (noting that "cycling's biological passport program seemed to be on shaky ground").

178. *CAS Sets Court Dates for Riders De Bonis, Pellizzotti To Challenge Cycling's Anti-Doping Scheme*, ASSOCIATED PRESS, Feb. 18, 2011, available at Factiva, Doc. No. APRS000020110218e72i001bp.

179. *Caucchioli Tests Cycling Anti-Doping Scheme at CAS*, ASSOCIATED PRESS, Dec. 21, 2010, available at Factiva, Doc. No. APRS000020101221e6cl0029u.

180. The CAS heard the UCI's appeal of the NADC tribunal's decision in the Valjavec case in January 2011. *Id.*

181. The CAS heard De Bonis's appeal of the CONI panel's decision in his case in February 2011. *Italian Cyclist De Bonis in Sports Court To Fight Biological Passport Doping Case*, ASSOCIATED PRESS, Feb. 25, 2011, available at Factiva, Doc. No. APRS000020110225e72p002nc.

182. The CAS heard the UCI's and Pellizzotti's appeals of the CONI tribunal's decision in the Pellizzotti case in March 2011. *Italian Cyclist Franco Pellizzotti Faces UCI in Court Test of Passport Anti-Doping Method*, ASSOCIATED PRESS, Mar. 2, 2011, available at Factiva, Doc. No. APRS000020110302e732002cu.

alone.¹⁸³ In the *Caucchioli* case, the CAS panel held that “the strict application of [the biological passport] could be considered as a reliable means of detecting indirect doping methods.”¹⁸⁴ Moreover, the CAS panel found that “the ‘irregularities’ put forward by [Caucchioli] could not have affected the results” reflected in the cyclist’s biological passport.¹⁸⁵ Therefore, the CAS panel found that the UCI had “successfully established the use of prohibited doping methods,” and it affirmed the CONI tribunal’s decision to impose a two-year ban on *Caucchioli*.¹⁸⁶

In the *Pellizotti* case, the CAS panel overturned the CONI panel’s decision clearing *Pellizotti* and instead found the cyclist guilty of doping.¹⁸⁷ The CAS panel found that fluctuations in *Pellizotti*’s biological passport were sufficient to prove the cyclist had engaged in prohibited blood doping.¹⁸⁸ As a result, the CAS panel suspended *Pellizotti* for two years, disqualified his race results dating back to May 2009, and fined him €115,000.¹⁸⁹ The UCI and WADA hailed these decisions as broadly vindicating cycling’s biological passport.¹⁹⁰

183. Press Release, Court of Arbitration for Sport, The Court of Arbitration for Sport (CAS) Imposes a Two Year Ban on the Italian Cyclists Pietro Caucchioli and Franco Pellizotti 1–2 (Mar. 8, 2011), available at http://www.tas-cas.org/d2wfiles/document/4615/5048/0/press%20release%20ANG_2010%2003%2008.pdf.

184. *Id.*

185. *Id.*

186. *Id.* at 2.

187. *Id.*

188. *Id.*

189. Graham Dunbar, *UCI Wins Landmark Anti-Doping Verdicts as CAS Bans Italian Riders Pellizotti, Caucchioli*, ASSOCIATED PRESS, Mar. 8, 2011, available at Factiva, Doc. No. APRS000020110308e738002go; see also Press Release, Court of Arbitration for Sport, *supra* note 183, at 1 (“[T]he CAS Panel has reviewed in detail the biological passport program applied by the UCI and has found that the strict application of such program could be considered as a reliable means of detecting indirect doping methods.”).

190. See Press Release, Union Cycliste Internationale, CAS Acknowledges Validity of Biological Passport (Mar. 9, 2011), available at <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=NzI0NA> (“The [CAS] decisions . . . confirm the validity of the biological passport as an essential instrument in the fight against doping, which will most certainly become part of the arsenal of other international sporting federations that wish to draw on the UCI’s experience.”); Press Release, World Anti-Doping Agency, WADA Satisfied with CAS Recognition of Athlete Biological Passport as Valid Instrument (Mar. 9, 2011), available at <http://www.wada-ama.org/en/News-Center/Articles/WADA-satisfied-that-Athlete-Biological-Passport-recognized-by-CAS-as-valid-instrument-in-the-fight> (“The [biological passport] has proven it can withstand legal and scientific challenges.”).

In April 2011, the CAS similarly found Valjavec guilty of doping based on indirect biological-passport evidence.¹⁹¹ The CAS reversed the NADC panel's initial decision clearing Valjavec and instead levied a two-year suspension against the cyclist, disqualified his race results between April 2009 and September 2009, and fined him €52,500.¹⁹² The CAS panel concluded that "anti-doping tests performed in April and August 2009 revealed abnormalities in the context of the athlete's biological passport to a degree which was entirely consistent with blood manipulation."¹⁹³ Moreover, the CAS panel explicitly "confirmed the reliability of the indirect method of detection based on the blood profile of athletes . . ."¹⁹⁴ Subsequently, the UCI announced that it was "extremely satisfied because this CAS verdict [had] once again given support to the reliability of the biological passport."¹⁹⁵

Finally, in June 2011, the CAS dismissed De Bonis's appeal and upheld the CONI tribunal's doping sanctions against the cyclist.¹⁹⁶ In doing so, the CAS again confirmed its position that the biological passport is "a reliable means of proving an anti-doping violation."¹⁹⁷

Although CAS panels are not necessarily bound by the precedent of prior arbitration proceedings or obliged to obey the rules of *stare decisis*,¹⁹⁸ the CAS has signaled a broad willingness to accept indirect biological-passport evidence in finding cyclists guilty of doping, and subsequent CAS panels will likely continue to uphold such sanctions.¹⁹⁹

191. Charles Pelkey, *Court of Arbitration for Sport Rules in Favor of UCI, Suspends Tadej Valjavec*, VELONEWS (Apr. 22, 2011, 9:28 AM UTC), http://velonews.competitor.com/2011/04/news/court-of-arbitration-for-sport-rules-in-favor-of-uci-suspends-tadej-valjavec_169785.

192. *Id.*

193. Graham Dunbar, *Slovenia's Valjavec Gets 2-Year Ban for Doping, Gives UCI 3rd Biological Passport Win at CAS*, ASSOCIATED PRESS, Apr. 22, 2011, available at Factiva, Doc. No. APRS000020110422e74m001s9 (internal quotation marks omitted).

194. *Id.*

195. *Id.*

196. *Italian Rider De Bonis Loses Doping Ban Appeal*, ASSOCIATED PRESS, June 22, 2011, available at Factiva, Doc. No. APRS000020110622e76m001hv.

197. *Id.*

198. Connolly, *supra* note 17, at 197.

199. Over the past decade, there has been general agreement among CAS arbitrators that CAS panels should typically follow the reasoning of previous panels. *Id.* Nevertheless, CAS panels may diverge from prior reasoning in cases in which "there are compelling reasons in the interest of justice" to do so. *Id.*

IV. CONCERNS PRESENTED BY CYCLING'S BIOLOGICAL PASSPORT

Despite the CAS's initial support for cycling's biological passport, serious questions persist as to the reliability of indirect biological-passport evidence and the validity of its application in antidoping cases. In turn, these uncertainties raise concerns over the fundamental fairness of sanctioning cyclists for doping on the basis of their biological passports alone. These unresolved issues should give future CAS panels pause before those panels uphold doping violations based solely on cycling's biological passport.

A. *Continuing Uncertainty Regarding Indirect Biological-Passport Evidence*

Debate persists over the reliability of indirect biological-passport evidence and the clarity, consistency, and transparency of its application in prosecuting cyclists for doping violations. This uncertainty undermines the validity of using biological-passport evidence as the sole basis for doping violations.²⁰⁰

First, it is not clear that the biological passport provides reliable evidence that a cyclist has committed a doping violation. Cycling's biological passport is based on a statistical model²⁰¹ that analyzes fluctuations in a cyclist's biological variables and makes a threshold determination as to whether that cyclist is likely to have committed a doping violation. This analysis, however, is inherently uncertain.²⁰² The model can only point to a likelihood of doping²⁰³—it cannot definitively establish a doping violation.²⁰⁴ Moreover, the science

200. See Nafziger, *supra* note 67, at 47 (characterizing the “reliability of this approach” as “highly controversial”).

201. See *supra* notes 131–133 and accompanying text.

202. *The Athlete Biological Passport*, *supra* note 132 (noting the “uncertainties associated with the inferences that may be drawn from evidentiary values”).

203. *Id.* (“[T]he decision rule [under the biological passport] is not based on a true probability of doping, but rather on how the profile differs from what is expected in clean athletes. This conceptual difference is well known in forensics for the evaluation of scientific evidence: to sentence an athlete solely from a high level of specificity would be a fallacy of statistical reasoning that results from misunderstanding the idea of multiple testing. A high number of anti-doping tests simply elevates the likelihood of finding a positive by pure chance alone.” (internal quotation marks omitted)).

204. Ann Gripper, then-manager of the UCI's Anti-Doping Service, explains that the biological passport allows the UCI to “make a determination as to the likelihood of doping based on that rider's individual profile” but acknowledged that the Anti-Doping Service “may not actually be able to say what it is, whether it's autologous blood transfusions or micro-dosing with EPO.” John Wilcockson, *The New Passport: A Conversation with Anne Gripper*,

underlying the biological passport continues to be refined.²⁰⁵ Questions remain regarding the statistical model's ability to accurately distinguish between biological fluctuations that should be considered normal and those that may signal doping, especially among the small and atypical population of elite professional cyclists.²⁰⁶ The model may also be unable to differentiate between fluctuations caused by doping and those that result from some other cause, such as permitted altitude training²⁰⁷ or a cyclist's preexisting medical condition.²⁰⁸

As a result, antidoping experts debate the reliability of biological-passport evidence in signaling doping. Although the UCI maintains that its statistical model is capable of determining a doping violation "with a degree of certainty sufficient to commence disciplinary proceedings,"²⁰⁹ others dissent. For instance, Dr. Max

VELONEWS (Oct. 24, 2007, 1:00 AM UTC), http://velonews.competitor.com/2007/10/news/the-new-passport-a-conversation-with-anne-gripper_13563 (quoting Gripper).

205. Bonnie D. Ford, *Experts: Landis Info Could Be Crucial*, ESPN, <http://sports.espn.go.com/oly/cycling/news/story?id=5222488> (last updated May 26, 2010, 9:19 PM ET) (reporting that WADA Director General David Howman defended the biological passport but admitted that refining was necessary).

206. *The Athlete Biological Passport*, *supra* note 132 ("Empirical evidence on a high number of non-doped, control subjects is primordial since a high specificity—to avoid to falsely accuse an innocent—is required in an anti-doping setting."); Barry Ryan, *Testa and BMC Weigh In Behind Biological Passport*, CYCLING NEWS (Mar. 2, 2011, 4:28 PM), <http://www.cyclingnews.com/news/testa-and-bmc-weigh-in-behind-biological-passport> ("The main concern I have as a physician is that the variation [of blood values] can be huge. We don't know what the variability is in this specific population [of professional cyclists], as they train a lot and travel a lot, so maybe their variations are not exactly the same as those of average people. Most of the studies [that antidoping authorities] use to support [cycling's biological passport] are done on athletes, but not athletes to this extreme level of fitness." (quoting Dr. Max Testa) (internal quotation marks omitted)).

207. *The Athlete Biological Passport*, *supra* note 132 (discussing "confounding factors" other than doping that can cause fluctuations in an athlete's biological passport and noting that "transient exposure to altitude is known to modify markers of altered erythropoiesis" otherwise thought to indicate blood doping); *Explanation of Blood Passport*, SCI. & INDUS. AGAINST BLOOD DOPING, <http://siab.org.au/what-is-blood-passport/passport-explanation.php> (last visited Oct. 7, 2011) ("What this threshold does not reveal, however, is whether the abnormal profile was the result of doping, a medical condition or some other explanation. . . . [S]ome pathological conditions give rise to highly unusual blood profiles.").

208. See *The Athlete Biological Passport*, *supra* note 132 ("[D]oping is not the only possible cause to explain a detected abnormality. A pathological condition must be excluded first. In hematology for example, the prevalence of blood disorders may be high in certain populations—typically a few percents—in function of factors such as age and ethnic origin.").

209. UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 19; see also *Athlete's Biological Passport*, LABORATOIRE SUISS D'ANALYSE DU DOPAGE, http://www.doping.chuv.ch/en/lad_home/lad-recherche-developpement/lad-recherche-developpement-projets-finalises/lad-recherche-developpement-projets-finalises-pass-biol.htm (last updated Oct. 7, 2008) ("Thanks

Testa, the BMC Racing Team doctor, believes that a “margin of uncertainty” remains in biological-passport cases and has warned that the program is still in the process of being refined.²¹⁰ Similarly, Dr. Roberto Corsetti, the Team Liquigas doctor, has argued that the “variations in most cases . . . are debatable.”²¹¹ Others have gone even further in their criticism. Dr. Nicolaas Faber and Dr. Bernard Vandeginste have concluded that the model underlying cycling’s biological passport is “clearly flawed,” “overly simplistic,” and “misleading.”²¹² As a result, they assert that the “information gathered in the biological passport is grossly incomplete and, therefore, prosecution on the basis of the biological passport lacks a sound logical foundation.”²¹³

Second, serious concerns exist regarding the clarity, consistency, and transparency of the expert review of biological-passport data.²¹⁴ Once the statistical computer model determines that fluctuations in a cyclist’s biological passport are likely to signal a doping violation, that cyclist’s data are submitted to a panel of three experts for further interpretation.²¹⁵ Although this expert review is supposed to address the shortcomings of the statistical model,²¹⁶ the review process presents problems of its own.

to a number of recent developments, it is possible today to obtain data with sufficient sensitivity and specificity to launch disciplinary action in certain cases on the sole basis of indirect blood markers.”).

210. Ryan, *supra* note 206.

211. Brown, *supra* note 166.

212. Nicolaas (Klaas) M. Faber & Bernard G.M. Vandeginste, *Flawed Science ‘Legalized’ in the Fight Against Doping: The Example of the Biological Passport*, 15 ACCREDITATION & QUALITY ASSURANCE 373, 373 (2010).

213. *Id.*; see also Klaas Faber & Marjan Sjerps, *Anti-Doping Researchers Should Conform to Certain Statistical Standards from Forensic Science*, 49 SCI. & JUST. 214, 215 (2009) (“[A]ny claim by the prosecution about the likelihood of the truth of a hypothesis lacks a sound logical foundation.”).

214. Antidoping authorities should make an effort to apply their antidoping controls clearly, consistently, and transparently. See Connolly, *supra* note 17, at 198 (“To continue to settle doping cases fairly, CAS must ensure that all parties who come before its arbitration panels trust in both the clarity of anti-doping rules and the consistency in their application.”).

215. UNION CYCLISTE INTERNATIONALE, *supra* note 12, at 20.

216. See *The Athlete Biological Passport*, *supra* note 132 (“The role of this panel of experts is not only to protect the athlete’s right to a qualified review prior to the possible assertion of an anti-doping rule violation, but it also ensures that all possible factors, causes and events are considered thoroughly.”).

For instance, few clear standards seem to guide the expert review of biological-passport data.²¹⁷ Instead, according to Dr. Michael Ashenden, a member of the UCI's biological-passport panel, each panel member has the discretion to "examine whatever markers he or she chooses" in reviewing the data.²¹⁸ Whereas objective standards would ensure some degree of consistency, this subjective review²¹⁹ is likely to result in inconsistent outcomes.²²⁰

Similarly troubling is the fact that only three of the nine panel members review any given set of irregular biological-passport data.²²¹ Dr. Giuseppe D'Onofrio, another member of the UCI's biological-passport panel, believes that this format may undermine the accuracy and consistency of the data review.²²² Requiring all nine panel members to examine biological-passport fluctuations would ensure a more robust review of the data.²²³

217. Antidoping authorities should strive for clarity and predictability in their antidoping rules. Connolly, *supra* note 17, at 185 ("Regulations that may affect the careers of dedicated athletes must be predictable." (quoting USA Shooting & Q. v. Union Internationale de Tir, No. CAS 94/129, at 1 (Ct. of Arb. for Sport 1995), <http://jurisprudence.tas-cas.org/sites/CaseLaw/Shared Documents/129.pdf>); Lambert, *supra* note 63, at 441 (advocating "greater clarity of [antidoping] rules, consistency of enforcement, and predictability of adjudication").

218. John Matson, *Can Biological "Passports" Root Out Doping in Sports?*, SCI. AM. (Mar. 5, 2009), <http://www.scientificamerican.com/article.cfm?id=biological-passports-cycling-doping>. Although Dr. Ashenden "tend[s] to scrutinize reticulocyte [immature-red-blood-cell] values," *id.* (second alteration in original) (quoting Dr. Ashenden) (internal quotation mark omitted), another expert might examine a different set of variables and come to a different conclusion.

219. Dr. Testa has acknowledged the subjective nature of this review. "To be honest, I like to see some kind of fluctuations because that is the way it should be," he explained. Ryan, *supra* note 206 (quoting Dr. Testa) (internal quotation marks omitted). "The problem is how we interpret the variation—is a stable number good or is it bad? Sometimes it's better to see some variation rather than someone always at the same number, because you can think that that is also the result of manipulation. We're just learning." *Id.* (quoting Dr. Testa) (internal quotation marks omitted).

220. Antidoping programs should promote consistency. Schmalzer, *supra* note 75, at 689 ("Inconsistencies and questionable behavior on the part of anti-doping organizations and laboratories undermine the credibility of the anti-doping effort.").

221. Ryan, *supra* note 1.

222. Dr. Giuseppe D'Onofrio said, "I don't agree that it should be groups of only three experts evaluating the profiles All nine of used [*sic*] should be involved together in order to arrive at a broadly unanimous decision." *Id.* (quoting Dr. D'Onofrio) (internal quotation marks omitted).

223. According to Dr. Giuseppe Banfi, a hematological expert, "Involving all nine experts on the panel would mean the procedures were sounder and more stable." *Id.* (quoting Dr. Banfi) (internal quotation marks omitted). Others have gone further. Federico Scaglia, secretary of the Italian Professional Cyclists Association, has formally requested that "the UCI no longer filter the selection of the athletes' profiles and that all nine experts have the data of

Furthermore, the review process lacks transparency.²²⁴ Because the evaluation of biological-passport data requires a high level of technological sophistication, this analysis has become “increasingly black boxed” and closed to outside review.²²⁵ Dr. Giuseppe Banfi, a hematological expert, has observed that “there is a closed attitude from a scientific point of view as the [biological passport] system is self-referential.”²²⁶ Although the UCI counsels cyclists and NGBs to simply “trust the review that has been conducted by [the UCI’s] experts,”²²⁷ this admonition provides little solace to cyclists accused of doping solely on the basis of fluctuations in their biological passports.²²⁸

B. *The Unfairness of Cycling’s Biological Passport*

The unresolved questions regarding both biological-passport data and the process by which these data are reviewed raise a related set of concerns over the fairness of finding cyclists guilty of doping on the basis of indirect biological-passport evidence alone.²²⁹

the 850 riders involved and not just the anomalous data.” *Id.* (quoting Scaglia) (internal quotation mark omitted).

224. Antidoping programs should foster transparency. Connolly, *supra* note 17, at 199 (“[I]t is incumbent upon the sporting bodies to do everything in their power to promote a fair, transparent, and trustworthy system.”).

225. Rayvon Fouché, *Cycling’s “Fix,”* 33 J. SPORT & SOC. ISSUES 97, 98 (2009) (“The biological passport and the number of doping cases have moved the enforcement location of clean athletic performance deeper into the scientific laboratory. The processes by which clean performance is determined is getting increasingly black boxed by the technological sophistication of the diagnostic tools and instruments and the breadth of scientific knowledge required to interpret these samples, observations, and data.”).

226. Ryan, *supra* note 1.

227. Daniel Benson, *Exclusive: Anne Gripper Breaks Silence on Blood Passport*, CYCLING NEWS (June 18, 2009, 10:42 AM), <http://www.cyclingnews.com/features/exclusive-anne-gripper-breaks-silence-on-blood-passport> (“What we’re expecting them to understand is that we have the best experts in the world and that they’ve reviewed the data properly.” (quoting Anne Gripper, then-manager of the UCI’s Anti-Doping Service) (internal quotation marks omitted)).

228. In response to questions regarding the transparency of cycling’s biological passport, at least one cyclist has called for all biological-passport data to be made publicly available. Daniel Benson, *Wiggins Calls for Biological Passport Data To Be Made Public*, CYCLING NEWS (Jan. 19, 2011, 10:53 AM), <http://www.cyclingnews.com/news/wiggins-calls-for-biological-passport-data-to-be-made-public>.

229. Considering this uncertainty, Dr. Testa has said, “I’m not sure if I would use the [biological passport] parameters to say a guy is doing something” Ryan, *supra* note 206 (alteration in original) (quoting Dr. Testa) (internal quotation mark omitted).

Antidoping policy requires a careful balancing of competing goals.²³⁰ There is little doubt that “[d]oping is fundamentally contrary to the spirit of sport.”²³¹ Antidoping authorities serve a noble function, promoting “health, fairness and equality” by protecting the rights of all athletes “to participate in doping-free sport.”²³² The UCI has taken important steps toward eliminating doping from professional cycling, a sport often regarded by more cynical commentators as “a competition between pills, not skills.”²³³

At the same time, however, the need to effectively police sport for doping must be weighed against the fundamental rights of individual athletes.²³⁴ Although athletes agree to be bound by the rules that govern their sports, antidoping authorities must apply these rules fairly in light of all that is at stake for athletes accused of doping.²³⁵ The mere allegation of doping can have a devastating impact on an athlete.²³⁶ Finding an athlete guilty of doping can ruin

230. The CAS has recognized the “necessary balance” between the “needs of [antidoping authorities] to implement new, reliable testing methods as quickly as possible, on the one hand, and the interests of athletes and the sporting community in ensuring trustworthy test results, on the other.” *Int’l Ass’n of Athletics Fed’n v. Fédération Royale Marocaine d’Athlétisme*, No. CAS 2003/A/452, at 1 (Ct. of Arb. for Sport 2003), <http://jurisprudence.tas-cas.org/sites/CaseLaw/Shared%20Documents/452.pdf>.

231. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 14.

232. *Id.* at 11.

233. James B. Jacobs & Bruce Samuels, *The Drug Testing Project in International Sports: Dilemmas in an Expanding Regulatory Scheme*, 18 HASTINGS INT’L & COMP. L. REV. 557, 559 (1995).

234. See Weston, *supra* note 43, at 39 (“An athlete’s right to work in his or her chosen profession, economic and liberty rights, and potential exposure to criminal charges in domestic and foreign courts all are at stake in this process.” (footnote omitted)).

235. See *U.S. Anti-Doping Agency v. Landis*, No. 30 190 00847 06 (N. Am. Ct. of Arb. for Sport 2007), at 5 (Campbell, J., dissenting), [http://www.usada.org/files/active/arbitration_rulings/Landis%20Final%20\(20-09-07\)%20\(3\).pdf](http://www.usada.org/files/active/arbitration_rulings/Landis%20Final%20(20-09-07)%20(3).pdf) (“[A]ny anti-doping system must be held accountable, like the athletes. . . . Drug testing agencies should not be playing hide the ball when athletes’ careers are on the line.”); Connolly, *supra* note 17, at 199 (“While the athletes must recognize and adhere to this ethical responsibility, the sporting bodies must remain mindful of the serious consequences that inevitably result from such a system.”); Foschi, *supra* note 60, at 458 (noting that a “prevalence of false positive tests” would “risk[] the careers and reputations of innocent athletes”).

236. See Weston, *supra* note 43, at 7–8 (“The accusation alone converts the admired athlete into an apparent pariah. The years an athlete spends focused on training, competing, and working with coaches and teammates hardly prepares him or her for the complex process involved in clearing his or her name, and taking on the system that could render the athlete ineligible, banned from sport, and possibly subject to criminal liability.”).

that athlete's career: he may be banned from his sport, fined enormous sums of money, and even subjected to criminal liability.²³⁷

Therefore, antidoping authorities must "walk a fine line" between pursuing means of eliminating doping from sport and protecting the fundamental rights of individual athletes.²³⁸ In weighing these competing interests, antidoping bodies confront difficult challenges.²³⁹ Never are these challenges greater than when considering whether to implement a new antidoping technology.²⁴⁰ Cutting-edge technologies offer great promise in the fight against doping, but the science underlying such technologies must be sufficiently refined to protect innocent athletes from false accusations.²⁴¹ These competing interests require a "delicate balance."²⁴²

Finding cyclists guilty of doping solely on the basis of their biological passports threatens to upset this delicate balance. The unresolved questions regarding the validity of cycling's biological passport and the critically important rights at stake for cyclists counsel a cautious approach.²⁴³ Antidoping authorities should not accuse athletes of doping unless "the possibility of a false positive is

237. Under cycling's biological passport, "the mere inference of doping, created by a deviation from the baseline, would be all that is required to ruin an athlete's career." Schmalzer, *supra* note 75, at 698.

238. *See id.* at 677 ("Losing faith in either [of these goals] will undermine the very purpose of drug testing, which is to protect the rights of athletes and maintain a sense of equality and fairness in competition.").

239. *See Nafziger, supra* note 67, at 55 ("The difficult question is: in the interest of a level playing field for all athletes, to what extent should we run the risk of abandoning a traditional reliance on hard laboratory data to justify the imposition of essentially penal sanctions against athletes?").

240. *See Connolly, supra* note 17, at 167-68 ("Despite the need to launch new methods as quickly as possible in order to thwart cheaters, WADA and other organizations must not prematurely introduce new testing methods. They must [instead] exercise caution before approving a testing method because of the potentially devastating consequences to the image of anti-doping programs in general if an athlete were to be prosecuted on the basis of a false positive test resulting from an unreliable method.").

241. *Id.* at 169 ("The sporting world has a significant interest in implementing new testing techniques that will discourage the use of performance-enhancing substances and expose cheaters as quickly as possible. But sport also has an interest in making sure that the reliability of these testing methods is unquestionable.").

242. *Id.*

243. *See Foschi, supra* note 60, at 485 ("[G]reat precaution must be taken to ensure that the desire to rid the sport of cheaters does not carelessly allow innocent athletes to bear the same label without the same fault.").

virtually nonexistent.”²⁴⁴ Before aggressively pursuing future doping sanctions on the basis of indirect biological-passport evidence, the UCI would be wise to reassess whether such efforts adequately balance the interest in eliminating doping from sport against the fundamental rights of individual cyclists. Failing to balance these equally important goals may serve to undermine—rather than bolster—the integrity of the sport.²⁴⁵

V. RECOMMENDATIONS FOR IMPROVING CYCLING'S BIOLOGICAL PASSPORT

Despite these concerns, there are a number of less problematic ways in which antidoping authorities can use cycling's biological passport as an effective antidoping control. First, the UCI should use the biological passport primarily as a basis for instituting intelligent, targeted testing against cyclists who exhibit irregularities in their biological-passport variables. Second, WADA and the CAS should make the standard of proof more stringent in cases in which allegations of doping rest solely on indirect biological-passport evidence. Each of these alternatives would effectively ameliorate the existing flaws in cycling's biological passport.

A. *Using Cycling's Biological Passport for Targeted Testing*

The UCI should use cycling's biological passport primarily as a basis for instituting intelligent, targeted testing against cyclists with irregular fluctuations in their biological-passport profiles, rather than pursuing doping violations on the basis of those cyclists' biological-passport data alone.²⁴⁶ In other words, the UCI should utilize indirect biological-passport evidence in tandem with proven antidoping controls, such as direct detection of prohibited substances.²⁴⁷ When

244. Connolly, *supra* note 17, at 169.

245. See Foschi, *supra* note 60, at 476 (noting that overly aggressive antidoping policy may be “offensive to the very spirit of the sport that WADA and the Olympic Movement seek to develop and protect”).

246. See *UCI Anti-Doping Programme*, *supra* note 46 (describing the ways in which the UCI already employs targeted testing in its antidoping efforts).

247. According to Dr. Neil Robinson, indirect biological-passport evidence helps antidoping authorities to “predict when [certain cyclists are] going to dope, and that allows [them] to provide information to the [UCI] so [it] can better adapt [its] anti-doping tests” to target cyclists with irregularities in their biological-passport profiles. *Biological Passport: 10 Years Beyond Other Sports*, BIKE RADAR (Mar. 9, 2009, 8:44 PM GMT), <http://www.bikeradar.com/>

irregularities in an individual cyclist's biological passport suggest the effects of doping, the UCI should target that cyclist for additional testing. If this targeted testing results in an analytical positive finding, the UCI should then pursue doping sanctions on the basis of the positive doping test.

This approach would offer a number of advantages. First, targeted testing would largely eliminate concerns about the reliability of indirect biological-passport evidence and would provide cyclists with greater safeguards against false positives. Under this approach, doping sanctions would be supported by analytical positive findings in addition to biological-passport data.²⁴⁸ Second, targeted testing would enable the UCI to build a greater body of scientific research linking indirect biological-passport data with analytical positive findings, perhaps laying the foundation for a more robust and scientifically sound biological passport in the future.²⁴⁹ Third, this approach would allow the UCI to avail itself of the strict-liability standard applicable in conventional analytical positive cases. As a result, the UCI might avoid the lengthy and expensive arbitration proceedings that typically result when the UCI pursues controversial nonanalytical positive cases without the benefit of strict liability. Fourth, targeted testing would continue to deter cyclists from doping without subjecting them to potentially unfair sanctions.²⁵⁰

In fact, targeted testing appears to have been the primary approach envisioned by WADA. In its Athlete Biological Passport Operating Guidelines, WADA describes the biological passport as a

news/article/biological-passport-10-years-beyond-other-sports-20764 (quoting Dr. Robinson) (internal quotation mark omitted).

248. According to Dr. Testa, “[Biological-passport] parameters . . . would make me focus more on the athlete and do more controls on him . . . [Direct and indirect testing] have to work together.” Ryan, *supra* note 206 (quoting Dr. Testa) (internal quotation marks omitted).

249. Increased data would “improve scientific understanding of the range of [biological-passport] readings that are normal.” Gilbert, *supra* note 80, at 19. According to Dr. Don Catlin, former director of the UCLA Olympic Analytical Laboratory, “To really reduce false negatives, you’ve got to have a lot of data on a lot of people to know where to draw the line . . . We’re not there yet.” *Id.* (quoting Dr. Catlin) (internal quotation marks omitted).

250. There are, of course, potential disadvantages to targeted testing. For instance, cyclists might be concerned that antidoping authorities would abuse this approach by harassing individual cyclists with excessive testing. Nevertheless, cyclists’ rights are better safeguarded under targeted testing than under a policy of pursuing doping violations based on indirect biological-passport evidence alone. Second, the UCI may be concerned that this approach would make it more difficult to pursue doping violations in the absence of a positive analytical finding, which could result in increased false negatives.

“complementary strategy” to traditional antidoping protocols.²⁵¹ WADA states that “[t]he objective of the Athlete Biological Passport is to monitor and identify possible doping in order to intelligently target an Athlete for traditional Doping Controls and *where appropriate* to establish a doping violation.”²⁵² This language indicates that indirect biological-passport evidence should be used primarily as a complementary tool, rather than serving as the sole basis for proving doping violations.

Moreover, the UCI has already successfully implemented intelligent, targeted testing based on indirect biological-passport evidence. This approach has proven effective in a number of cases, resulting in analytical positive findings and allowing the UCI to prosecute cyclists for doping based on positive doping tests.²⁵³ Furthermore, in December 2010, the UCI announced plans to increase targeted testing under its biological-passport program.²⁵⁴

Nevertheless, the UCI has also continued to pursue controversial nonanalytical positive cases on the basis of indirect biological-passport evidence alone. In fact, in a report following the 2010 Tour de France,²⁵⁵ WADA drew “stark attention” to the fact that the UCI’s

251. WORLD ANTI-DOPING AGENCY, *supra* note 57, at 3. Though these guidelines are not mandatory, they reflect WADA’s position as to the most effective way of administering a biological-passport program. *Id.* at 4.

252. *Id.* at 10 (emphasis added) (emphasis omitted).

253. *See, e.g.*, Press Release, Union Cycliste Internationale, Manuel Vazquez Hueso Provisionally Suspended (Apr. 26, 2010), *available at* <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=Njg0NQ> (“The decision to provisionally suspend this rider was made in response to . . . an Adverse Analytical Finding of EPO in a urine sample This targeted test was carried out on the basis of information contained in the rider’s biological passport.”); Press Release, Union Cycliste Internationale, Massimo Giunti Provisionally Suspended (Mar. 10, 2010), *available at* <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=Njc3Mw> (“This adverse finding was a direct result of a targeted urine test conducted because of an unusual blood profile in Mr. Giunti’s biological passport.”); Press Release, Union Cycliste Internationale, Pawel and Kacper Szczepaniak Provisionally Suspended (Mar. 11, 2010), *available at* <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=Njc3NA> (“These adverse findings were a direct result of a targeted urine test The blood samples collected before the event . . . had already shown, within the biological passport programme, that the blood profiles of these two riders were suspect.”).

254. Press Release, Union Cycliste Internationale, The UCI Presents the Main Themes of Its Anti-Doping Programme for 2011 (Dec. 3, 2010), *available at* <http://www.uci.ch/Modules/ENews/ENewsDetails.asp?id=NzE1Ng> (announcing that the UCI’s 2011 antidoping efforts would “provide[] for a significant increase in the number of controls conducted on riders whose [biological-passport] profiles may indicate illegal behaviour”).

255. INDEP. OBSERVER TEAM, REPORT OF THE INDEPENDENT OBSERVERS: TOUR DE FRANCE 2010 (2010), *available at* http://www.wada-ama.org/Documents/World_Anti-Doping_Program/WADP-Independent-Observer/WADA_IO_Report_TDF2010_EN.pdf.

biological passport was “not being backed up with dedicated and targeted anti-doping controls.”²⁵⁶ Instead, WADA criticized the UCI for continuing to prioritize analysis of indirect biological-passport data “to the detriment of [directly] testing for banned substances.”²⁵⁷ In the future, the UCI should consider utilizing the biological passport primarily as a tool for instituting targeted testing, rather than pursuing doping violations on the basis of biological-passport data alone.

B. Imposing a Heightened Standard of Proof in Biological-Passport Cases

Alternatively, if the UCI continues to pursue doping violations based solely on indirect biological-passport evidence, the UCI should be required to prove such violations under a heightened standard of proof. As written, the Code requires antidoping authorities to prove doping violations only to the “comfortable satisfaction” of the hearing panel.²⁵⁸ This intermediate standard of proof has been criticized in light of the quasi-criminal, penal nature of antidoping cases.²⁵⁹ The standard of proof applied in analytical positive cases may be less important, as athletes in such cases are held strictly liable for positive doping tests.²⁶⁰ In nonanalytical positive cases, however, the standard of proof applied can be a determining factor.²⁶¹ In light of the continuing uncertainty surrounding biological-passport evidence, an

256. Ryan, *supra* note 206.

257. Barry Ryan, *UCI To Study Recommendations of WADA's Independent Tour de France Report*, CYCLING NEWS (Oct. 29, 2010, 4:15 PM), <http://www.cyclingnews.com/news/uci-to-study-recommendations-of-wadas-independent-tour-de-france-report>. Several cyclists with suspicious biological-passport profiles and impressive Tour performances were not even directly tested. For instance, one cyclist with a “priority index” of ten—meaning that he was considered to be under the highest suspicion of doping—was not required to give any blood or urine samples between April 3, 2010 and the beginning of the Tour, nor was he required to give any blood samples after the Tour had started. *Id.*

258. WORLD ANTI-DOPING AGENCY, *supra* note 2, at 26. This standard is “greater than a mere balance of probability but less than proof beyond a reasonable doubt.” *Id.*

259. See Nafziger, *supra* note 67, at 54 (“[T]he consequences of a doping infraction are essentially of a penal nature and therefore merit a high standard of proof.”); Straubel, *supra* note 18, at 1272 (“[T]he burden of proof used in doping cases should be more like that used in criminal cases.”); Weston, *supra* note 43, at 44 (“The quasi-criminal nature of doping hearings and sanctions warrants a process that comports with the principles underlying Constitutional protections for defendants in criminal cases.”).

260. See Greene, *supra* note 68, at 157 (discussing the relatively “straightforward evidentiary issues” presented in analytical positive cases under the strict-liability standard).

261. McLaren, *supra* note 84, at 194–95.

intermediate standard of proof provides insufficient safeguards for cyclists accused of doping on the basis of indirect evidence alone.²⁶²

Instead, WADA and the CAS should consider requiring the UCI to prove doping violations in biological-passport cases beyond a reasonable doubt.²⁶³ WADA could amend the Code to mandate the beyond-a-reasonable-doubt standard in biological-passport cases, or the CAS could choose to apply this heightened standard in appeals of such cases.²⁶⁴ The beyond-a-reasonable-doubt standard would provide more robust protections for cyclists accused of doping on the basis of fluctuations in their biological passports and would better guarantee that innocent cyclists are not wrongly found guilty of doping.²⁶⁵ Though a heightened standard would make biological-passport cases more difficult to prove, such a standard would also serve antidoping authorities' interests by conferring greater legitimacy on those decisions that do find cyclists guilty of doping.²⁶⁶ Adopting the beyond-a-reasonable-doubt standard in these cases would largely eliminate the various concerns with the existing approach while allowing the UCI to continue to pursue doping violations on the basis of indirect biological-passport evidence.

CONCLUSION

The biological passport has the potential to be a valuable weapon in the fight against doping in sport. Buoyed by its initial biological-passport successes before the CAS, the UCI will no doubt continue to aggressively pursue doping sanctions against cyclists

262. See Myler, *supra* note 86, at 750 (describing the comfortable-satisfaction standard as "ambiguous"); Nafziger, *supra* note 67, at 54 (describing critiques that the standard is "too relaxed to protect athletes' rights of due process").

263. See Greene, *supra* note 68, at 166 ("CAS Tribunals should consider adopting a criminal burden of proof in non-analytical positive cases because evidence of an athlete's guilt in these matters is not [as] straightforward as it is in doping cases that involve an analytical positive."); McLaren, *supra* note 84, at 211 (observing that the comfortable-satisfaction standard in nonanalytical positive cases "continues to depend on the gravity of the case and that comfortable satisfaction moves to a very high standard that can become indistinguishable from beyond a reasonable doubt").

264. See Straubel, *supra* note 18, at 1266 ("While the [comfortable-satisfaction] standard has been codified in the World Anti-Doping Code, it was CAS that developed the standard and it will be CAS that will refine the standard.").

265. Paul Greene, *Can the Biological Passport Program Be Trusted?*, PRETI SPORTS L. BLOG (Aug. 20, 2010, 2:58 PM), <http://pretisportslaw.blogspot.com/2010/08/can-biological-passport-program-be.html>.

266. *Id.*

solely on the basis of indirect biological-passport evidence. Meanwhile, WADA has adopted uniform biological-passport guidelines, and antidoping bodies in other sports have begun to implement biological passports of their own.²⁶⁷

Nevertheless, antidoping authorities must proceed carefully. The biological passport represents a paradigm shift in antidoping efforts, and it is still being refined. The initial cases pursued through cycling's biological passport have raised serious concerns about the reliability of inferences drawn from biological-passport data and the fairness of finding an athlete guilty of doping on the basis of indirect evidence alone. These concerns should give future CAS panels pause before they continue to uphold doping sanctions based solely on indirect biological-passport evidence. The biological passport promises a valuable approach to antidoping efforts, but "maybe it's been put on the road too soon to act as an anti-doping control."²⁶⁸

267. For example, the International Association of Athletics Federations, the international body that governs the sport of track and field, adopted a biological-passport program in December 2010. Press Release, Int'l Ass'n of Athletics Fed'ns, Athlete Biological Passport: A Promising New Strategy in the Fight Against Doping in Athletics (Dec. 14, 2010), *available at* <http://www.iaaf.org/antidoping/news/newsid=58918.html>.

268. Ryan, *supra* note 1 (quoting Dr. Corsetti) (internal quotation mark omitted).