

# THE LANCE ARMSTRONG CASE

## THE EVIDENCE BEHIND THE HEADLINES

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### INTRODUCTION

On 24 August, 2012, the United States Anti-Doping Agency (USADA) announced that it had imposed on Lance Armstrong a sanction of lifetime ineligibility and disqualification of competitive results achieved since 1 August, 1998.

On 10 October, 2012, USADA sent their “Reasoned Decision” on the Lance Armstrong case to the Union Cycliste International (UCI), the World Anti-Doping Agency (WADA) and the World Triathlon Corporation (WTC), stating that the evidence shows beyond any doubt that the US Postal Service Pro Cycling Team “ran the most sophisticated, professionalised and successful doping programme that sport has ever seen”<sup>1</sup>.

On 22 October, 2012, the UCI accepted the USADA findings and formally stripped Lance Armstrong of his seven Tour de France titles<sup>2</sup>.

This article provides an insight into the facts behind these dramatic headlines, primarily using evidence presented in USADA’s Reasoned Decision report<sup>1</sup>.

### A BRIEF HISTORY

After competing in the 1992 Barcelona Olympic Games, Lance Armstrong became a professional cyclist. In 1996, he underwent surgery and chemotherapy to treat testicular cancer. Between 1999 and 2005, Armstrong won the Tour de France a record seven times. He retired from competitive cycling in 2005 but returned in 2009 before retiring for a second time 2 years later.

### USADA CHARGES AGAINST LANCE ARMSTRONG

Lance Armstrong claimed to have been one of the most frequently tested athletes in the world and that the results of his tests had never shown the presence



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of a prohibited drug. The presence of a prohibited substance is just one of the eight Anti-Doping Rule Violations, specified in the World Anti-Doping Code, for which athletes can be sanctioned<sup>3</sup>.

Regardless of Armstrong's claims that he was clean, it can be seen from Table 1 that USADA's charges against Armstrong closely correlate with all the rule violations specified in the Code, except those directly relating to the presence of a drug in a sample or evasion of doping tests.

In addition, USADA cited "Aggravating Circumstances" to justify the lifetime ban that they imposed<sup>4</sup>.

The USADA therefore presented an extensive and robust case against Lance Armstrong.

#### THE EVIDENCE BASE FOR USADA'S DECISION

The World Anti-Doping Code specifies that doping can be proved by "any reliable means". As shown in Table 1, the case against Lance Armstrong was based on a wide variety of evidence.

There were a number of strands to the evidence presented by USADA:

- Sworn statements from professional cyclists.

- Banking and accounting records.
- Email communications.
- Laboratory test results and expert analysis.

#### Sworn statements

Sworn statements were presented from more than two dozen witnesses, including 15 professional cyclists. These included 11 former teammates (Frankie Andreu, Michael Barry, Tom Danielson, Tyler Hamilton, George Hincapie, Floyd Landis, Levi Leipheimer, Stephen Swart, Christian Vande Velde, Jonathan Vaughters and David Zabriskie) and his former soigneur (masseuse).

These witness testimonies were a substantial component of the evidence base against Lance Armstrong. The Reasoned Decision document provided detailed and referenced accounts of these testimonies.

#### Banking and accounting records

Banking and accounting records were from a Swiss company controlled by Doctor Michele Ferrari, a member of the US Postal Services team, reflecting more than one million dollars in payments by Lance Armstrong.

#### Email communications

Email communications between Dr Ferrari and his son and Lance Armstrong during a time period in which Armstrong claimed not to have a professional relationship with Dr Ferrari were presented in evidence.

#### Laboratory test results

The Reasoned Decision report stated that the core of USADA's case was witness testimony and documentary evidence. However, the report also described laboratory and analytical evidence as further corroboration of their findings. These analytical data related to three separate incidents which occurred during the period of the investigation.

#### 1. Samples from the 1999 Tour de France

A validated test for Erythropoietin (EPO) was not available prior to 2000. In 2004, the French Anti-Doping Laboratory conducted a research project on stored urine samples from the 1999 Tour de France, including a retrospective analysis of EPO use. The source of the urine samples was unknown to the research project team. The results of the analysis were sent to WADA in August 2005.

WORLD ANTI-DOPING CODE ANTI-DOPING RULE VIOLATIONS	USADA CHARGES AGAINST LANCE ARMSTRONG
<i>Presence of a prohibited substance or its metabolites or markers in an athlete's sample</i>	
<i>Use or attempted use by an athlete of a prohibited substance or a prohibited method</i>	<i>Use and/or attempted use of prohibited substances and/or methods including EPO, blood transfusions, testosterone, corticosteroids and/or masking agents.</i>
<i>Refusing or failing without compelling justification to submit to sample collection</i>	
<i>Violation of applicable requirements regarding athlete availability for out-of-competition testing</i>	
<i>Tampering or attempted tampering with any part of doping control</i>	<i>Assisting, encouraging, aiding, abetting, covering up and other complicity involving one or more anti-doping rule violations and/or attempted anti-doping rule violations.</i>
<i>Possession of prohibited substances and prohibited methods</i>	<i>Possession of prohibited substances and/or methods including EPO, blood transfusions and related equipment (such as needles, blood bags, storage containers and other transfusion equipment and blood parameters measuring devices), testosterone, corticosteroids and/or masking agents.</i>
<i>Trafficking or attempted trafficking in any prohibited substance or prohibited method</i>	<i>Trafficking of EPO, testosterone, and/or corticosteroids.</i>
<i>Administration or attempted administration to any athlete in-competition of any prohibited method or prohibited substance</i>	<i>Administration and/or attempted administration to others of EPO, testosterone, and/or cortisone.</i>
	<i>Aggravating circumstances (including multiple rule violations and participated in a sophisticated scheme and conspiracy to dope, encourage and assist others to dope and cover up rule violations) justifying a period of ineligibility greater than the standard sanction.</i>

**Table 1:** Violations vs charges against Lance Armstrong.

In 2005, the French newspaper *L'Equipe* published an article claiming that samples showing the presence of EPO could be linked to Lance Armstrong. Following this publication, WADA asked UCI to look into this matter. Subsequent enquiries raised questions relating to the validity of the protocol that had been used by the French Anti-Doping laboratory.

USADA's Reasoned Decision concluded that "while LNDD's (French Anti-Doping Laboratory) analysis of the 1999 samples may not stand alone to establish a positive test under the Code, the analysis is consistent with and corroborates the numerous written statements recently obtained by USADA."

## 2. Samples from the 2001 Tour of Switzerland

When the test for EPO was first developed and used in 2000, the criteria established to determine whether a test was positive were conservatively set at a very high level.

At the 2001 Tour of Switzerland, the Director of the Lausanne WADA-accredited anti-doping laboratory reported to USADA that the laboratory had detected a number of samples in the tour that were suspicious for the presence of EPO. Furthermore, USADA were informed by the Director that on reporting these results to UCI, he had been told that at least one of these samples belonged to Lance Armstrong but that there was no way Armstrong was using EPO.

Subsequently, these samples were labelled "suspect". Again, USADA considered that the evidence from the 2001 Tour of Switzerland samples strongly corroborates eyewitness evidence of Lance Armstrong's possession and use of EPO.

## 3. Blood test results during the 2009 and 2010 Tour de France

It was reported that WADA's Anti-Doping Administration and Management System (ADAMS) contained results of blood samples from Lance Armstrong, including 29

collected by UCI between 16 October, 2008, and 18 January, 2011, and nine samples collected by USADA between 13 February, 2009 and 30 April, 2012.

These blood test results were re-examined, at USADA's request. It was observed that five samples during the 2009 Tour de France and two samples during the 2010 Tour de France contained an unusually low percentage of reticulocytes. Suppression of these immature red blood cells occurs when additional red blood cells are added to the circulation, as would occur after blood transfusion.

Comparative analysis was also carried out on Lance Armstrong's blood plasma volumes between samples measured during the 2009 Tour de France and the 2009 Giro d'Italia. While the plasma volume increased throughout the Giro d'Italia, as would be expected, during the Tour de France, an increase in plasma volume over the first 7 days was followed by 3 days during which the plasma volume decreased



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back to pre-race levels. It was concluded that this was evidence that Lance Armstrong had engaged in blood transfusion during this period. However, a request to UCI by USADA for laboratory and collection information to validate the accuracy of the UCI blood test results was refused without Lance Armstrong's consent. This consent was not granted.

## **WHY WAS LANCE ARMSTRONG NOT SANCTIONED EARLIER?**

There are two principal reasons why Lance Armstrong and his team avoided earlier sanctioning:

1. The nature of the substances and methods used.
2. The inadequacies of the testing procedures.

### ***Substances and methods used***

Substances and methods that appear on the WADA Prohibited List can be broadly categorised as:

- Those substances that do not occur naturally in the body and for which there are robust analytical laboratory tests, for example anabolic steroids, diuretics, stimulants such as amphetamines and cocaine, narcotics, beta blockers and others.
- Those substances and methods for which there is a naturally occurring component in the body and for which analytical testing provides significant challenges to the testers, for example testosterone, erythropoietin, blood transfusions, human growth hormone and corticosteroids.

It is therefore unsurprising to note that the prohibited substances and methods for which Lance Armstrong and his team were sanctioned fell into the second category.

Looking in more detail at the substances and methods for which Lance Armstrong was sanctioned, we find:

### **Erythropoietin (EPO)**

An effective test for EPO was not available until 2000. Therefore the use of EPO prior to this date went virtually unchallenged. The EPO test used post-2000 compares the ratio of naturally occurring EPO to synthetic EPO. This comparison can be deceived to a degree by stimulating the natural production of EPO through simulating altitude by sleeping in an 'hypoxic chamber'. Furthermore, intravenous rather than subcutaneous injection of EPO ensures a more rapid excretion of the drug. By using regular, small doses (micro-dosing) in the evening, it was calculated that the drug would have been excreted from the body within the 12 hour night time period during which testing was unlikely to have taken place.

Since raised haematocrit levels is an indicator for EPO use, saline infusions would have been used to reduce haematocrit levels below the 50% level at which the UCI would suspend a cyclist from competing. Exceeding this 50% threshold was not a doping violation at that time.

### **Testosterone**

A similar strategy of taking small doses sublingually (i.e. under the tongue) or through wearing patches for a few hours in the evening was adopted for testosterone. Sublingual preparations involved Andriol (an ester of testosterone) mixed with olive oil.

### **Human growth hormone**

An effective, validated test for human growth hormone was not available at the time of the alleged offences.

### **Blood transfusion**

Autologous blood transfusion was difficult to detect. As with EPO, saline infusions could be used to reduce the haematocrit level if a blood test was likely to be carried out.

### **Cortisone**

The regulations for prohibiting the use of glucocorticosteroids depend on a number of factors including the route of administration and the requirement for a therapeutic use exemption. A false declaration of a medical need was easy to obtain.

### ***Inadequacies of the testing procedures***

It was reported in USADA's Reasoned Decision document that the team riders overcame what little out-of-competition testing there was at the time by simply using their wits to avoid the testers. The ways in which this was achieved included:

- Staying in accommodation where testing was unlikely to be conducted.
- Where necessary, the withdrawal from a competition.
- Surveillance by team members looking out for UCI testers. This was facilitated by inadequacies in the confidentiality of test planning and the inappropriate use of I.D. badges and tour-branded clothing and vehicles by drug testers.
- Delaying the haematocrit test by having team members with lower haematocrit levels tested first, thereby allowing time for those with higher haematocrit levels to infuse saline.

## **THE WIDER CONSEQUENCES TO THE LANCE ARMSTRONG CASE**

In addition to the sanctions imposed on Lance Armstrong, there have been



a significant number of additional consequences resulting from this case.

The 11 teammates who decided to break the Code of Silence (Omerta) in professional cycling have been given 6-month suspensions, ratified by the UCI. However, the UCI also made a point of thanking these riders for testifying in this case.

UCI have formally stripped Lance Armstrong of his seven Tour de France titles. However, they have decided not to award the titles to other riders. As reported by USADA, 20 of the 21 podium finishers in the Tour de France from 1999 and 2005 have been directly tied to likely doping through admissions, sanctions, public investigations or exceeding the UCI haematocrit threshold.

USADA concluded that it had more than enough evidence to proceed with charges against former United States Postal Service and Discovery Channel team personnel including: Doctors Michele Ferrari, Luis Garcia del Moral and Pedro Celaya, Team Trainer Jose Marti and Team Director Johan Bruyneel.

Following the publication of the USADA report, there have been a number of resignations of high profile administrators in cycling organisations, who have acknowledged involvement in doping during their career in cycling.

The UCI has been questioned over a \$100,000 donation made by Lance Armstrong to the UCI in 2002, a year after his “suspect” test for erythropoietin at the 2001 Tour of Switzerland.

Sponsors, such as Rabobank have ended their multi-million euro support for professional cycling.

The sportswear company, Nike, and other major companies have withdrawn their sponsorship of Lance Armstrong.

Lance Armstrong has concluded his chairmanship of the Livestrong Foundation, the charity he had set up to fund cancer research and cancer patient-support services.

There may be other consequences that arise in the future as further investigations associated with this case proceed.

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## IS THERE HOPE FOR THE FUTURE OF CYCLING?

There are a number of initiatives that could significantly change the way in which the sport of cycling tackles the problem of doping:

On 26 October, 2012, the UCI announced the creation of an independent commission to investigate the Lance Armstrong affair. However, the UCI appeared to rule out the establishment of 'Truth and Reconciliation Commission', as recommended by USADA.

- Cycling must continue to fully embrace the World Anti-Doping Code in line with the UCI's claim that riders are now subject to the most innovative and effective anti-doping procedures and regulations in sport.
- The UK-based Team Sky cycle team has asked each team member, at every level, to sign a clear-written policy confirming that they have no past or present involvement in doping. Perhaps this initiative could be adopted by other teams.

## SUMMARY

Cycling is a sport that is followed by fanatical supporters around the world and which receives more media coverage than most sports. There is no question that the Lance Armstrong affair has cast a huge shadow over the sport of cycling. Let us hope that significant changes will be made by all those involved in the sport as a result of the USADA investigation so that the image of cycling will be dramatically improved in time for the UCI Road World Championships to be held in Qatar in 2016.

## References

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