

**Arbitration CAS 2008/A/1480 Pistorius v/ IAAF, award of 16 May 2008**

Panel: Prof. Martin Hunter (United Kingdom), President; Mr David W. Rivkin (USA); Mr Jean-Philippe Rochat (Switzerland)

*Athletics**Eligibility for an athlete with disabilities to compete in IAAF-sanctioned events alongside able-bodied athlete**Standard of proof**No proven biochemical or metabolic advantage over other athletes due to the prosthesis*

1. **IAAF Rule 144.2(e) states that “For the purposes of this Rule, the following shall be considered assistance, and are therefore not allowed: [...] (e) Use of any technical device that incorporates springs, wheels, or any other element that provides the user with an advantage over another athlete not using such a device”. Where there is no sufficient evidence of any metabolic advantage in favour of a disabled athlete – a double-amputee using a prosthesis – due to the fact that the disabled athlete uses the same oxygen amounts as able-bodied runners at a sub-maximal running speed and no evidence that the biomechanical effects of using this particular prosthetic device gives the athlete an advantage over other athletes not using the device, the disabled athlete cannot be banned to compete in international IAAF-sanctioned events alongside able-bodied athlete.**
2. **Where an appeal does not concern any disciplinary element, it is not the “beyond reasonable doubt” standard applicable in criminal cases which is applicable nor can it be any of the possible intermediate standards that are discussed from time to time in connection with the disciplinary processes. In such a case, the applicable standard is the “balance of probability”.**

The Appellant, Oscar Pistorius (“Mr Pistorius”) is a citizen of, and resident in, the Republic of South Africa. He is a professional athlete competing in 100, 200 and 400 meter sprints.

The Respondent, the International Association of Athletics Federations (IAAF; the “Federation”), governs the sport of athletics throughout the world and recognized as such by the International Olympic Committee. The IAAF has its seat in the Principality of Monaco.

In this arbitration, Mr Pistorius appeals Decision No. 2008/01 of the IAAF Council on 14 January 2008 (the “IAAF Decision”) that the “Cheetah” prosthetic legs worn by Mr. Pistorius, who has been a double amputee since he was eleven months old, constituted a technical device and provided him with an advantage over an able-bodied athlete in violation of IAAF Competition Rule 144.2(e).

The IAAF Decision was based on a report prepared for the IAAF by Professor Brüggemann and his colleagues at the German Sport University in Cologne (the “Cologne Report”). As a result of the IAAF Decision, Mr Pistorius is banned from competing against able-bodied athletes in IAAF-sanctioned events.

The history of this matter is remarkable, and possibly without precedent. It is necessary to recount it in some detail, in order that the reader may understand the extraordinary nature of the disputed issues and the complexity of the related scientific aspects.

Mr Oscar Pistorius is a South African citizen, born on 22 November 1986 without fibula bones in his legs. At the age of eleven months his legs were amputated below his knees. Since then Mr Pistorius has run, walked and undertaken many other physical activities using prosthetic lower limbs, and he will continue to do so for the rest of his life.

Nevertheless, sport has dominated his life. During his time at school, Mr Pistorius competed in a number of different sports, including rugby, water polo, tennis and wrestling. During the hearing he stated that he had never thought of himself as being “disabled”. He has no recollection of having his own natural legs. At the hearing, the IAAF’s counsel described him as ... *a great athlete, an inspiring athlete.*

Mr Pistorius began running competitively in January 2004 when, after seriously injuring his knee on the rugby field, he took up sprinting as part of his rehabilitation programme.

For participation in sporting activities Mr Pistorius uses a prosthesis known as the *Cheetah Flex-Foot*, supplied by a company headquartered in Iceland, Össur HF (“Össur”). The *Cheetah Flex-Foot* is designed for single and double transtibial (below-the-knee) and transfemoral (above-the-knee) amputees who intend to run at recreational and/or competitive levels. It has been used by many single and double amputees, almost unchanged, since 1997.

In 2004, only a few months after he started running competitively, Mr Pistorius competed in the Athens Paralympics, where he won the Gold Medal in the 200-metre event and the Bronze medal in the 100-metre event. At the time of this appeal process he is the paralympic world-record holder at 100, 200 and 400 metres.

In 2004 Mr Pistorius also began to compete in IAAF-sanctioned events in South Africa alongside able-bodied athletes. He won a 100-metre open competition in Pretoria with a time of 11.51. In the following year he competed alongside able-bodied athletes in the South African Championship, in which he finished sixth in the 400 metre event.

In 2005 Mr Pistorius began to receive invitations to participate in IAAF international track events overseas. He was invited to compete in an IAAF-sanctioned international event in Helsinki in that year. However, he decided not to participate in that event, preferring to finish his secondary education and to train further before participating in IAAF international level competitions. For

approximately a couple of years he concentrated on completing his education and continuing with his training in athletics.

In early 2007 Mr Pistorius returned to competitive sprinting, and in March of that year he finished in second place in the South African Championships 400-metre event with a time of 46.56.

On 26 March 2007, the IAAF Council met in Mombassa, Kenya and decided to introduce an amendment to IAAF Rule 144.2 for the purpose of regulating the use of technical devices. The new rule prohibits:

(e) Use of any technical device that incorporates springs, wheels or any other element that provides the user with an advantage over another athlete not using such a device.

In the Spring of 2007 Mr Pistorius received an invitation to participate in the Norwich Union Glasgow Grand Prix, which was to be held on 3 June 2007. However, this invitation was subsequently withdrawn following intervention by the IAAF.

On 15 June 2007, at a press conference during the first 2007 Golden League meeting in Oslo, the IAAF President, when asked about the eligibility of Mr Pistorius, stated that he would not be excluded unless the IAAF received scientific evidence demonstrating that his prosthesis gave him an advantage. He was therefore considered eligible to compete at that time.

On 25 June 2007, Mr Pistorius received an invitation to participate in the Golden Gala event in Rome on 13 July 2007, where he ran in a specially staged "B" race which the IAAF arranged to be videotaped by an Italian sports laboratory using several high-definition cameras from different angles. He finished in second place, and the video subsequently became an exhibit in this appeal.

For a non-scientific observer, the video appears to show that Mr Pistorius was slower than other runners off the starting blocks, during the acceleration phase (approximately the first 50 metres) and running around the first bend, but faster over the "back straight". The split times of the race provided by the IAAF confirmed this observation. The able-bodied sprinters ran their fastest 100 metre splits in the first and second 100 metres, but Mr Pistorius ran his fastest 100 metre splits in the second and third 100 metres.

The initial scientific analysis of the videotapes by the Italian laboratory indicated that neither Mr Pistorius' stride-length, nor the length of time that his prosthesis was in contact with the ground, was significantly different from those of the other runners.

The IAAF official who had been given responsibility by the President of the IAAF to evaluate whether Mr Pistorius' prostheses contravened the new Rule 144.2(e) was Dr Elio Locatelli, whose testimony was heard by the Panel. As noted above the Rome observations, and the subsequent analysis of them, produced some results that were unexpected by Dr Locatelli and were, overall, inconclusive.

In order to take the evaluation further Dr Locatelli asked Professor Peter Brüggemann at the Institute of Biomechanics and Orthopaedics at the German Sport University in Cologne if he could

conduct a biomechanical study to demonstrate whether or not Mr Pistorius' prosthetic limbs gave him an advantage over other athletes. Prof. Brüggemann confirmed that he could undertake such a study, and on 24 July 2007 Mr Pistorius agreed to participate in the tests.

Prof. Brüggemann prepared a "testing protocol" based on instructions given to him by the IAAF in email correspondence, and conversations primarily by telephone. In summary, the tests were designed to evaluate Mr Pistorius' sprint movement using an inverse dynamic approach and also to study Mr Pistorius' oxygen intake and blood lactate metabolism over a 400-metre race simulation.

On 31 October 2007 Prof. Brüggemann contacted the IAAF to propose some revisions to the testing protocol. Essentially, these were to replace his initial proposal to carry out certain tests on a treadmill with other tests on a static exercise bicycle, because he had been informed that running fast on a treadmill, even with handrails, might be dangerous for Mr Pistorius.

The tests were conducted in Cologne over two days, on 12 and 13 November 2007. Mr Pistorius was accompanied by his agent, Mr Peet van Zyl, and Mr Knut Lechler, who was associated with Össur.

On 12 November 2007 Mr Pistorius and five "control" athletes of similar sprinting ability to him ran a sub-maximal 400-metre race on an outdoor track, followed by a series of maximal and sub-maximal sprints on a 100-metre track at the laboratory of the Institute. VO₂ consumption measurements were taken and blood lactate levels were recorded.

On 13 November 2007, anthropometric measures were conducted on all the participants using a 3D body scanner. The prostheses were measured using a materials testing machine. Two further tests were carried out, on an exercise bicycle, to measure the metabolic capacity of the athletes.

Prof. Brüggemann and his colleagues Messrs Arampatzis and Emrich issued the Cologne Report on 15 December 2007. The abstract of the Report contained the following conclusory passage:

The hypothesis that the transtibial amputee's metabolic capacity is higher than that of the healthy counterparts was rejected. The metabolic tests indicated a lower aerobic capacity of the amputee than of the controls. In the 400 m race the handicapped athlete's VO₂ uptake was 25% lower than the oxygen consumption of the sound controls, which achieved about the same final time. The joint kinetics of the ankle joints of the sound legs and the "artificial ankle joint" of the prosthesis were found to be significantly different. Energy return was clearly higher in the prostheses than in the human ankle joints. The kinetics of knee and hip joints were also affected by the prostheses during stance. The swing phase did not demonstrate any advantages for the natural legs in relation with artificial limbs. In total the double transtibial amputee received significant biomechanical advantages by the prosthesis in comparison to sprinting with natural human legs. The hypothesis that the prostheses lead to biomechanical disadvantages was rejected. Finally it was shown that fast running with the dedicated Cheetah prosthesis is a different kind of locomotion than sprinting with natural human legs. The "bouncing" locomotion is related to lower metabolic cost.

On 14 January 2008, the IAAF Council issued a Decision which included the following findings:

running with these prostheses requires a less-important vertical movement associated with a lesser mechanical effort to raise the body, and

the energy loss resulting from the use of these prostheses is significantly lower than that resulting from a human ankle joint at a maximal sprint speed.

Based on these findings the IAAF ruled that the *Cheetah Flex-Foot* prosthetics used by Mr Pistorius were to be considered as a ... *technical device that incorporates springs, wheels or any other element that provides the user with an advantage over valid athletes*, and therefore contravened Rule 144.2(e).

Mr Pistorius was thus declared ineligible to compete in IAAF-sanctioned events with immediate effect. He delivered his Statement of Appeal to the CAS on 13 February 2008.

In his Statement of Appeal, Mr Pistorius requested the CAS to vacate the IAAF Decision, and to determine that he may participate in competitions held under the IAAF Rules using his *Cheetah* prosthetic limbs.

On 25 March 2008, Mr Pistorius delivered his Brief, accompanied by witness statements and exhibits.

On 25 April 2008, the IAAF delivered its Reply Brief, accompanied by witness statements and exhibits

On 29 and 30 April 2008, the Panel held a witness hearing in Lausanne at the premises of the CAS.

LAW

The Arbitration Agreement and Jurisdiction of the CAS

1. The Arbitration Agreement is contained in Rule 60.11 of the IAAF Competition Rules:

In cases involving International-Level athletes (or their athlete support personnel), or involving the sanction of a Member by the Council for a breach of the Rules, whether doping or non-doping related, the decision of the relevant body of the Member may (unless Rule 60.17 applies) be appealed exclusively to CAS in accordance with the provisions set out in Rules 60.25 to 60.30.

2. Pursuant to Rule 60.25 of the IAAF Competition Rules (the "IAAF Rules"), an athlete may give notice of an appeal from a final decision of the IAAF within 30 days from the date of communication of its written reasons. The IAAF sent the IAAF Decision to Mr Pistorius on 16 January 2008. He filed this appeal with the CAS on 13 February 2008. Neither party has challenged the jurisdiction of the CAS, and the appeal has been held admissible by the CAS.
3. The IAAF Rules state that such an appeal shall take the form of a *de novo* review and re-hearing:

All appeals before CAS shall take the form of a re-hearing de novo of the issues raised by the case and the CAS Panel shall be able to substitute its decision for the decision of the relevant Tribunal of the Member of the IAAF where it considers the decision of the relevant tribunal of the Member or the IAAF to be erroneous or procedurally unsound.

4. It follows that this CAS Appellate Panel is mandated to review *de novo* the facts as well as the provisions of the relevant Rules and the applicable law (CAS Code, Article R57).

The issues to be determined

5. The issues raised by Mr Pistorius in his appeal may be categorised under four general headings:
 - (i) Did the IAAF Council exceed its jurisdiction in taking the IAAF Decision?
 - (ii) Was the process leading to the IAAF Decision procedurally unsound?
 - (iii) Was the IAAF Decision unlawfully discriminatory?
 - (iv) Was the IAAF Decision wrong in determining that Mr Pistorius' use of the *Cheetah Flex-Foot* device contravenes Rule 144.2(e)?

The Panel's analysis

6. The Panel considers that there is no need to set out the submissions of the Parties *in extenso*, or to quote long extracts *verbatim*. They are contained in the Parties' Briefs and can be read in those documents. The Panel also considers that it would be inappropriate to attempt to summarise the Parties' submissions, since many of them comprise complex scientific material that is not susceptible to reduction to summary form. Instead, the Panel provides references to the Parties' submissions by using footnotes where appropriate.
7. Mr Pistorius' counsel abandoned the jurisdictional objection (issue (i)) at a late stage in the hearing. The Panel now considers issues (ii), (iii) and (iv) in turn.

Issue (ii) Was the process leading to the IAAF Council's Decision no. 2008/01 procedurally unsound?

8. The events leading to the IAAF Decision began with the Council's adoption of the new Rule 144.2(e) on 26 March 2007 at its meeting in Mombasa, Kenya. The Panel found unconvincing Mr Davies' testimony that the introduction of this new Rule was aimed primarily at the use of spring technology in running shoes. There was evidence that the problems with running shoes had been around for some time, and were dealt with both before and after March 2007 without any need for a new Rule. Indeed, as the IAAF pointed out at the hearing, Rule 143.2 prohibits shoes that gives an athlete any unfair additional assistance including by the incorporation of any technology which will give the wearer an "unfair advantage".

9. The Panel considers it likely that the new Rule was introduced with Mr Pistorius in mind, and that it started the process that led to IAAF declaring him ineligible to compete in IAAF-sanctioned events in January 2008.
10. The next significant event was the filming of Mr Pistorius during the staged “B” race in Rome on 13 July 2007. The Panel finds nothing wrong with this. It appears to have been a *bona fide* exercise primarily designed to check whether Mr Pistorius’ stride-length was greater than that of other athletes who ran comparable times in competition.
11. Then the IAAF decided to investigate further by retaining the Cologne Institute to carry out biomechanical and metabolic tests, and to submit a report on whether Mr Pistorius’ prostheses gave him an advantage over other athletes. As stated above, Mr Pistorius agreed to participate in these tests.
12. At this stage, in the Panel’s view, the process began to go “off the rails”. The correspondence between the IAAF and Prof. Brüggemann shows that his instructions were to carry out the testing only when Mr Pistorius was running in a straight line after the acceleration phase. By the time that the IAAF commissioned the Cologne tests it was known that this was the part of the race in which Mr Pistorius usually ran at his fastest.
13. Having viewed the Rome Observations, including the videotape that was shown to the Panel, the IAAF’s officials must have known that, by excluding the start and the acceleration phase, the results would create a distorted view of Mr Pistorius’ advantages and/or disadvantages by not considering the effect of the device on the performance of Mr Pistorius over the entire race. The Panel considers that this factor calls into question the validity and relevance of the test results on which the Cologne Report was based. The Panel emphasises that there is no reason to believe that this was Prof. Brüggemann’s responsibility. At the hearing, Prof. Brüggemann made it clear that he did not believe that his mandate was to determine all of the advantages and disadvantages of running with the *Cheetah Flex-Foot* prosthesis. It was to determine whether or not it provided *an advantage* on the measures he was asked to undertake. It follows, in the view of the Panel, that the Cologne Report does not answer the question that the Panel is required to decide. This is not the fault of Prof. Brüggemann, whom the Panel regards as a scientist having expertise and integrity. It originates from the mission he was given by the IAAF.
14. The story is not enhanced by the fact that Dr. Robert Gailey, the scientist nominated by Mr Pistorius, and Össur, to participate in the Cologne testing¹, was effectively “frozen out” to such an extent that he declined to attend the Cologne tests. He was informed that he would be allowed to attend only as an observer, with no input on the testing protocol or on the analysis that would be made subsequently by Prof. Brüggemann’s team.

¹ Dr Robert Gailey, University of Miami School of Medicine, who stated in his letter: *where we feel our combined 30 years of experience with amputee track athletes would be of service is in the analysis and interpretation of the data after it is processed. As you know, motion analysis data interpretation can be somewhat subjective and knowledge of extraneous variables can assist with reaching informed conclusions.*

15. In fact, Dr Gailey's electronic letter of 29 October 2007 to Dr Locatelli, in which he set out a number of questions and suggestions directly relating to the testing protocol, was not only ignored by the IAAF, but was also not shown to Prof. Brüggemann². Indeed, Prof. Brüggemann testified that he was not aware of Dr Gailey's potential involvement, or the questions and suggestions that he had made in relation to the testing protocol.
16. Other elements of the process also give rise to concern. Following receipt of the Cologne Report, Mr Pistorius was given less than a month to respond to its findings. On 11 January 2008, the IAAF provided to its Council a summary of the Cologne Report prepared by the IAAF's own officials, the report, Mr Pistorius' letter in reply to the Report, which in effect stated that it would take time to produce a considered scientific response, and IAAF competition Rules 144.2.
17. Even more troubling, it emerged during the hearing that the IAAF's brief summary of the Cologne Report as communicated to its Council members was not approved by Prof. Brüggemann. When the Panel showed Prof. Brüggemann the summary during his testimony, he stated that he had not seen it before, and he was invited to take it away and comment on it later during the hearing. He later acknowledged that the summary as presented to Council members was not wholly accurate; in particular, certain percentages were stated incorrectly.
18. Furthermore, the Panel was not impressed by the fact that, on an important issue such as the eligibility of an athlete to compete in international events, the voting procedure, and the subsequent announcement of the result, can only be described as less than perfect. The document sent to Council members over the IAAF President's signature was despatched on a Friday (11 January 2008) with a request that the votes should be returned by the following Monday morning (14 January 2008). It comes as no great surprise that only 13 of the 27 Council members had returned their votes by the initial deadline, which was then extended.
19. The Panel also considers the technique specified by the IAAF in the voting papers, which stated that abstentions would be counted as positive votes to declare Mr Pistorius ineligible, was not a satisfactory method of justifying the IAAF's press statement to the effect that the decision was made by the Council *unanimously*.
20. The impression of prejudgment is also enhanced by the fact that Dr Locatelli and other IAAF officials told the press *before the vote was taken* that Mr Pistorius would be banned from IAAF-sanctioned events.
21. In summary, the Panel's impression is that, notwithstanding the IAAF's dignified and appropriate press statement in the Summer of 2007 from the highest levels of the Federation, by November of that year at least some IAAF officials had determined that they did not want Mr Pistorius to be acknowledged as eligible to compete in international IAAF-sanctioned events, regardless of the results that properly conducted scientific studies might demonstrate.

² Brüggemann testimony 30 April 2008 at about 5.30pm.

22. In the Panel's view, the manner in which the IAAF handled the situation of Mr Pistorius in the period from July 2007 to January 2008 fell short of the high standards that the international sporting community is entitled to expect from a federation such as the IAAF.
23. However, this conclusion makes little difference, if any, to the outcome of the appeal. As the IAAF's counsel rightly pointed out, this appeal is a *de novo* process. The merits of the issues are to be investigated, in a judicial manner, on the evidence and submissions presented to the Panel during the appellate process.

Issue (iii) Was the IAAF Council's Decision unlawfully discriminatory?

24. Mr Pistorius claims that the IAAF Decision is in breach of its obligation of non-discrimination, because it did not search for an appropriate accommodation as required by law. He claims that, in finding Mr Pistorius ineligible in all IAAF-sanctioned events without attempting to seek any alternative solution, modification or adjustment that might permit him to participate in such events on an equal basis with all able-bodied athletes, the IAAF has denied Mr Pistorius his fundamental human rights, including equal access to Olympic principles and values.
25. Disputes arising under the IAAF Rules shall be resolved in accordance with the provisions of the Rules. The Parties agree that the law applicable to substantive issues is the law of Monaco, as the law governing the IAAF Constitution pursuant to its Article 16.
26. The Convention on the Rights of Persons with Disabilities and its Optional Protocol (the "Convention") was adopted on 13 December 2006 at the UN Headquarters in New York, and was opened for signature on 30 March 2007. It came into force according to its terms (Art.45), thirty days after the twentieth ratification was deposited, on 3 May 2008.
27. Signing a Convention may create an obligation, in the period between signing and ratification, to refrain from acts that would defeat the object and purpose of the treaty. Ratification is an action taken by States that signal an intention to undertake legal rights and obligations contained in the Convention or the Optional Protocol. None of these actions have been taken by the Principality of Monaco, and the UN Convention has not been enacted in its Law.
28. Furthermore, the Convention would not be engaged in the circumstances of this appeal. By way of example, Article 30.5 provides that Contracting State shall encourage and promote the participation of persons with disabilities in mainstream sporting activities at all levels with a view to enabling them to participate on an *equal basis* to sporting activities.
29. In other words, disability laws only require that an athlete such as Mr Pistorius be permitted to compete on the same footing as others. This is precisely the issue to be decided by this Panel: that is, whether or not Mr Pistorius is competing on an equal basis with other athletes not using *Cheetah Flex-Foot* prostheses. As counsel for the IAAF rightly mentioned, if this Panel finds that Mr Pistorius' *Cheetah Flex-Foot* prostheses provide no advantage to Mr

Pistorius, he will be able to compete on an equal basis with other athletes. If the Panel concludes that Mr Pistorius does gain an advantage, the Convention would not assist his case.

30. Mr Pistorius' submission based on unlawful discrimination is accordingly rejected.

Issue (iv) Was the IAAF Council's Decision wrong in determining that Mr Pistorius' use of the Cheetah Flex-Foot device contravenes Rule 144.2(e)?

31. The Panel's point of departure for this part of the analysis is Rule 144.2(e), adopted by the IAAF's Council at its meeting in Mombasa, Kenya on 26 March 2007. As stated above, it reads as follows:

For the purposes of this Rule, the following shall be considered assistance, and are therefore not allowed:

[...]

(e) Use of any technical device that incorporates springs, wheels, or any other element that provides the user with an advantage over another athlete not using such a device.

32. Without implying any criticism of the draftsman, who faced an extraordinarily difficult task, the Panel considers that this provision is a masterpiece of ambiguity. What constitutes a *technical device*? For the purposes of the present enquiry, the Panel is prepared to assume that a passive prosthetic such as the *Cheetah Flex-Foot* is to be considered as a "technical device", even though this proposition may not be wholly free from doubt.
33. What constitutes a device that *incorporates springs*? Technically, almost every non-brittle material object is a "spring" in the sense that it has elasticity. Certainly the *Cheetah Flex-Foot* is a "spring", but does it *incorporate* a "spring"? A natural human leg is itself a "spring".
34. Then there is the critical question of the meaning of an *advantage ... over another athlete*. It was urged on the Panel by the IAAF's counsel that the ordinary and natural meaning of the word *advantage* is absolute, in the sense that if a *technical device* is used, and is determined (presumably by an appropriate and fair process) to provide an athlete with any *advantage*, however small, in any part of a competition, that device must render that athlete ineligible to compete regardless of any compensating disadvantages.
35. The Panel does not accept this proposition. Of course, athletes should not be forced to compete against persons who use powered aids such as motors, wheels, springs (as in "pogo sticks", for example), or other active propulsive devices. This is not in doubt, and interpreted in this way the new Rule 144.2(e) is a sensible and appropriate rule. But to propose that a passive device such as the *Cheetah Flex-Foot* as used by Mr Pistorius should be classified as contravening that Rule without convincing scientific proof that it provides him with an *overall net advantage* over other athletes flies in the face of both legal principle and commonsense. The rule specifically prohibits a technical device that *.... provides the user with an advantage over an athlete not using that device*. If the use of the device provides more disadvantages than advantages, then it cannot reasonably be said to provide an advantage over other athletes, because the user

is actually at a competitive disadvantage. That is the only sensible reading of the terms of Rule 144.2(e).

36. The Panel notes that this interpretation of Rule 144.2(e) was effectively adopted by Dr Locatelli of the IAAF in his testimony at the hearing, when he said that the rule would not prohibit Mr Pistorius from running in 100-metre or 200-metre races. Dr Locatelli said that such distances did not allow Mr Pistorius to catch up from his slower start. Thus, Dr Locatelli focused on the overall effect of the prosthesis and not on whether Mr Pistorius had an advantage at only one point in the race.
37. Unfortunately, as Prof. Brüggemann made clear during the hearing, the IAAF did not ask him to determine whether or not Mr Pistorius' use of the *Cheetah Flex-Foot* prosthesis provided him with an overall net advantage or disadvantage. The Cologne Report therefore does not address the central question that the Panel is required to answer in this appeal.

Burden and Standard of Proof

38. This leads the analysis into the question of proof. The IAAF rightly accepted the *burden* of proof. No further discussion of this aspect is required. However, the Parties were not agreed on the *standard* of proof to be applied. It clearly is not the “beyond reasonable doubt” standard applicable in criminal cases in most jurisdictions; nor, in the Panel’s view, can it be any of the possible intermediate standards that are discussed from time to time in connection with the disciplinary processes of, for example, professional bodies or regulatory bodies.
39. It is to be emphasised that this appeal does not concern any disciplinary element. No-one involved in the matter has suggested at any time that the predicament of Mr Pistorius is a disciplinary matter. The Panel agrees with the IAAF that the applicable standard is the “balance of probability”.

The Panel’s Assessment of the Evidence

40. The Panel took away from this proceeding a feeling of great respect for all the experts, and appreciated their efforts to educate its members on matters of considerable scientific complexity. The Panel particularly appreciates the spirit of co-operation and mutual respect with which they entered into the expert conferencing procedure proposed by the Panel and accepted by the Parties. The opening paragraph of the Points of Agreement by Drs Brüggemann, Potthast, Herr and Kram is instructive in this connection:

In general the scientific teams from both Cologne and Houston have a mutual trust in the scientific integrity of each other

41. There were areas of genuine agreement, and areas of genuine disagreement. As noted above, the Panel should not here try to summarise here all of the extensive scientific evidence

presented by these experts. However, it is useful to understand their basic findings and the contentions of the Parties that are based on them.

42. As shown in the quotation above from the abstract to the Cologne Report, and as stated in the IAAF Decision, the finding of an advantage in using the *Cheetah Flex-Foot* prosthesis comes principally from two elements of the Cologne Report: First, Mr Pistorius, in using the device, does not have as much vertical force with each step; in other words, he runs in a flatter manner than able-bodied runners. All the experts agreed that these measurements were valid. Second, Mr Pistorius uses less metabolic energy in running, perhaps as a result of that flatter running. These test results were challenged.
43. The experts presented by Mr Pistorius conducted their own tests on him and on able-bodied athletes as controls at a laboratory in Houston in February 2008 (the “Houston Report”). Among other things, tests set out in the Houston Report found that Mr Pistorius used the same oxygen amounts as able-bodied runners at a sub-maximal running speed, and thus did not have a metabolic advantage. Other tests also showed that Mr. Pistorius fatigued normally. Again, the experts agreed that these test results were valid. The Houston Report also tested the amount of energy loss from the *Cheetah Flex-Foot* prosthesis against the intact human leg, which includes tendons and other elements that generate positive energy (and which, for obvious reasons, an amputated athlete would not have). It is common ground that the Cologne Report did not measure any of these elements.
44. In summary, the Panel determines that the IAAF has not met its “on the balance of probability” burden of proof that Rule 144.2(e) is contravened by Mr Pistorius’ use of the *Cheetah Flex Foot* prosthesis for several reasons. First, as noted above, a violation would only occur if the user of the prosthesis gained an *overall net advantage* over other runners, and the IAAF did not ask Prof. Brüggemann and his colleagues to make that determination. The terms of reference put to Prof. Brüggemann and his team by the IAAF did not propose the appropriate question.
45. The testing protocol that he prepared for the purposes of writing the Cologne Report, on the basis of his instructions from the IAAF, was not designed to provide a scientific opinion as to whether Mr Pistorius’ *Cheetah Flex-Foot* prosthesis provided him with an overall net advantage over other athletes not using such devices. The point was stated clearly by Dr Locatelli in one of his press interviews, when he said *we are looking for advantages, not for disadvantages*. The experts also agreed at the hearing that *neither the Cologne nor Houston studies have quantified all of the possible advantages or disadvantages of Mr Pistorius in a 400m race*.
46. Secondly, the Panel is not persuaded that there is sufficient evidence of any metabolic advantage in favour of a double amputee using the *Cheetah Flex-Foot*. Certainly, the evidence presented in the Cologne Report is not capable of satisfying the burden of proof that is acknowledged by the IAAF. The IAAF seemed to recognize this fact at the hearing as it focused on the biomechanical aspects of the Cologne Report, and it acknowledged that most of the metabolic findings, including its blood lactate measurements, were not conclusive.

47. Similarly, the IAAF has not proven the other basis of the IAAF Decision: namely that the biomechanical effects of using the particular prosthetic device give Mr Pistorius an advantage over other athletes not using the device. In the last conferencing session among the experts and the Panel, the experts accepted that comparisons between the effective energy that can be used to increase the speed of sprinters using natural legs and prosthetic legs cannot be treated as providing definitive conclusions in the light of current scientific knowledge. They could not opine with certainty that the conflicting hypotheses they were advancing were indeed more than unprovable hypotheses. In particular, the scientists do not know if the fact that able-bodied runners create more vertical force than Mr. Pistorius is an advantage or disadvantage. There is at least some scientific evidence that sprinters, including 400m runners, train themselves to bounce more (ie, to use more vertical force) because it creates more speed. Thus, the Cologne Report's finding, on which the IAAF Decision relied, that Mr Pistorius uses less vertical force and runs in a flatter manner may be a *disadvantage* rather than an *advantage*.
48. In addition, while the Cologne Report found less energy loss in the *Cheetah Flex-Foot* prosthesis than in the human ankle, the scientific experts all agreed that the energy "lost" in the ankle could be transferred elsewhere in the body, through tendons, ligaments and muscles etc, because the human body does not like to lose energy. They agreed that that such a transfer cannot be properly measured or currently understood. Thus, based on current scientific knowledge, it appears to be impracticable to assess definitively whether the *Cheetah Flex-Foot* prosthesis acts as more than, or less than, the human ankle and lower leg, in terms of "spring-like" quality.
49. Moreover, the scientific experts agreed that *a mechanical advantage provided by a prosthetic leg would be expected to lead to a metabolic advantage for a runner*. As noted above, neither the Cologne Report nor the Houston Report showed such a metabolic advantage.
50. In the light of the Panel's analysis of the facts, the scientific expert opinions and the legal principles involved, the Panel has no doubt in finding that the IAAF has failed to satisfy the burden of proof that it accepts. It follows that Mr Pistorius' appeal must be upheld.
51. The Panel is re-inforced in reaching this conclusion by the fact that the *Cheetah Flex-Foot* prosthesis has been in use for a decade, and yet no other runner using them – either a single amputee or a double amputee – has run times fast enough to compete effectively against able-bodied runners until Mr Pistorius has done so. In effect, these prior performances by other runners using the prosthesis act as a control for study of the benefits of the prosthesis and demonstrate that even if the prosthesis provided an advantage, and as noted none has been proven, it may be quite limited.
52. The consequence of this ruling by the Panel is that the IAAF Council's Decision 2008/01 of 14 January 2008 is revoked with immediate effect, and Mr Pistorius is currently eligible to compete in IAAF-sanctioned events.
53. However, it is important to clarify what the result of this appeal does *not* decide.

54. First, the Panel's decision applies to Mr Pistorius while using the particular model of Cheetah Flex-Foot prosthesis that was the subject of the Cologne tests and shown to the Panel as exhibits during the hearing in Lausanne. It is not a general licence for Mr Pistorius to use any further developments of the *Cheetah Flex-Foot* that might be found to provide him with an overall net advantage.
55. Secondly, the Panel does not exclude the possibility that, with future advances in scientific knowledge, and a testing regime designed and carried out to the satisfaction of both Parties, the IAAF might in the future be in a position to prove that the existing *Cheetah Flex-Foot* model provides Mr Pistorius with an overall net advantage over other athletes.
56. Thirdly, the Panel's decision in this appeal has absolutely no application to any other athlete, or other type of prosthetic limb. Each case must be considered by the IAAF on its own merits. The ruling does not grant a blanket licence to other single or double amputees to compete in IAAF-sanctioned events using *Cheetah Flex-Foot* prosthetics, or indeed any other type of prosthesis. Each amputee athlete must collaborate with the IAAF to have his or her eligibility under Rule 144.2(e), as interpreted by this Panel, established on an individual basis. The Panel hopes that this will not impose a substantial new burden on the IAAF, because of the unique nature of Mr Pistorius' case. However, if it does create an additional burden, it must be viewed as just one of the challenges of 21st Century life.

The Court of Arbitration for Sport rules:

1. The IAAF having failed to satisfy the applicable burden of proof that it expressly acknowledged, the appeal filed by Oscar Pistorius on 13 February 2008 must be upheld.
2. Accordingly, the IAAF Council's Decision no. 2008/1 of 14 January 2008 is revoked with immediate effect, and the athlete is currently eligible to compete in IAAF-sanctioned events while wearing the Össur *Cheetah Flex-Foot* prosthesis model as used in the Cologne tests and presented as an exhibit at the Hearing of this appeal.
3. It is emphasised that the scope of application of this Ruling is limited to the eligibility of Mr Pistorius only and, also, only to his use of the specific prostheses in issue in this appeal.
4. It follows that this Ruling has no application to the eligibility of any other amputee athletes, or to any other model of prosthetic limb; and it is the IAAF's responsibility to review the circumstances on a case-by-case basis, impartially, in the context of up-to-date scientific knowledge at the time of such review.
5. No order is made as to costs, except that the CAS shall retain the Court Office fee of CHF 500 paid by the Appellant at the outset of this arbitration.