



**Arbitration CAS 2021/A/8167 Markus Rehm v. International Olympic Committee (IOC) & World Athletics (WA), award of 1 September 2021 (operative part of 23 July 2021)**

Panel: Mr James Drake QC (United Kingdom), Sole Arbitrator

*Athletics (long jump)*

*Eligibility of a disabled athlete to compete at the Olympic Games in able-bodied events*

*Absence of rule providing for prior application by an athlete for permission to use a “mechanical aid” in competition*

*Nomination of an athlete to a country’s National Olympic Committee*

*Running specific prosthesis (RSP) assumed to be a “mechanical aid” for the purposes of WA Technical Rule 6.3.4*

*Burden and standard of proof that a RSP provides an overall competitive advantage*

*Interpretation of WA Technical Rule 6.3.4*

1. The WA Technical Rule 6.3.4 is an *in-competition* rule with its own protocol for adherence and appeal (and no appeal in respect of a decision made thereunder is permitted to CAS). It neither provides for, nor contemplates, any sort of prior application by an athlete for permission to use a ‘mechanical aid’ in competition. If an athlete submits a request to WA seeking permission, say, to use a certain item of equipment, it makes eminent sense for the athlete to allow WA time to form a view as to such equipment and to cooperate with WA in such a process – but that is not to say that the rules impose an obligation (contractual or otherwise) on the athlete to seek such permission.
2. The national federations nominate athletes to take part in an event at the Olympic Games. The nomination, which must accord with established criteria (issued by the national federation), is made to the National Olympic Committee (NOC). If the nomination is effective, the NOC enters the athlete in the relevant event in the Olympic Games. If the nomination is, for one reason or another, not effective, then the NOC is not in a position to enter the athlete.
3. A Running Specific Prosthesis (RSP) might as a matter of definition be deemed a “mechanical aid” for the purposes of WA Technical Rule 6.3.4. But the matter is far from free from doubt and cannot be decided in the absence of full argument on the question.
4. The burden of proof in connection with the question as whether the use of a RSP provides an athlete with an overall competitive advantage over an athlete not using such an aid falls on WA and the standard of proof is on the balance of probabilities.
5. The question whether a particular disabled athlete will derive an “overall competitive advantage” through the use of a mechanical aid can only be answered by comparing (a) the performance that the athlete is actually capable of achieving while running with

**his disability and his mechanical aid; and (b) the performance he would hypothetically have been capable of achieving in the same event if he was running without that disability and without that aid.**

## **I. PARTIES**

1. Mr Markus Rehm (“Mr Rehm” or the “Athlete” or the “Appellant”) is a professional athlete who competes in the long jump. He lives in Leverkusen, Germany. He is 32 years old (as at the date of this award).
2. The International Olympic Committee (the “IOC” or the “First Respondent”) is the world governing body of Olympic sport and has its registered offices in Lausanne, Switzerland. The IOC is incorporated as an association pursuant to Articles 60 *et seq.* of the Swiss Civil Code.
3. World Athletics (“World Athletics” or the “Second Respondent”) is the international governing body for the sport of athletics, recognised as such by the IOC. It has its seat and headquarters in Monaco. As the international governing body of the sport of athletics, World Athletics has promulgated various rules and regulations governing (among other things) international track and field competitions (as is well known, World Athletics was formerly known as the International Association of Athletics Federations or “IAAF”).

## **II. FACTUAL BACKGROUND**

4. This is a dispute as to whether Mr Rehm should be admitted as an entrant in the men’s long jump competition at the Games of the XXXII Olympiad - Tokyo 2020 (hereinafter the “2020 Tokyo Olympic Games”).
5. Mr Rehm is a track and field athlete of some renown. When he was 14 years old (in 2005) he lost his right leg below the knee in a wake-boarding accident. He began competing in para athletics and in para athletics Mr Rehm is classified in category T64, namely athletes with a single below the knee amputation who compete in running or jumping using a prosthesis (a running specific prosthesis or ‘RSP’). Mr Rehm has achieved considerable success, not least three gold medals across the Paralympic Games in 2012 and 2016 and he was Germany’s flag bearer at the opening ceremony of the 2016 Paralympic Games 2016 in Rio de Janeiro. He has also competed in able-bodied competitions at international level, winning gold in the 2016 Indoor Grand Prix in Glasgow.
6. This dispute has been percolating for some time. The issue first arose in 2014 when Mr Rehm became the German national long jump champion and qualified for the European Championships. As a result of concerns expressed by the German Athletics Association (Deutscher Leichtathletik Verband, or “DLV”) as to whether his RSP provided him with an

advantage, in July 2014 the DLV conducted a biomechanical study. That study is not in evidence but, in reliance upon it, the DLV ruled that Mr Rehm was not permitted to compete in the European Championships against able-bodied athletes on the basis that his RSP provided him with a competitive advantage.

7. Instigated in part by Mr Rehm, a further study was conducted in 2016. The preliminary results of this study were announced in a press release issued at a press conference on 30 May 2016 and Mr Rehm sent them on to World Athletics on the same day asking for a *“personal meeting in the near future to discuss the next steps and further common possibilities”* (Mr Rehm relied on the contents of this press release in support of his submission that he did not obtain an advantage in the long jump as a result of using his RSP).
8. On 31 May 2016, the German National Paralympic Committee wrote to World Athletics saying that *“Since [World Athletics] (...) has failed to provide a satisfactory reply to the issues concerning the requirements and evaluation techniques in the case of the long-jumper Markus Rehm, the athlete has seized the initiative himself and requested renowned scientific institutions to conduct an investigation of the matter. The result has now been published and will be shortly submitted to [World Athletics]. The research study shows that the athlete does not derive an advantage from using a prosthesis in long-jump competitions. We therefore believe that the demands of [World Athletics] have been met”*.
9. World Athletics responded on 15 June 2016. World Athletics expressed surprise at the statement that the study showed that Athlete derived no advantage and noted that, in fact, the study recorded that *“at this stage of the research, we cannot state that Markus Rehm’s prosthesis does or does not provide him with an overall advantage”*. Mr Garcia, the World Athletics General Secretary, closed by saying that he would be *“reaching out”* to Mr Rehm for a personal meeting. It appears that Mr Garcia was also the chair of a World Athletics working group that had been put in place in April 2016 to study *“the generic use of prostheses in competition by athletes with a disability, specifically the long jump”* which working group had its first meeting on 20 April 2016.
10. Mr Rehm replied by letter dated 20 June 2016. He said that *“we are happy to have a meeting with you talking about the current situation and further common possibilities”*. The personal meeting between Mr Rehm and Mr Garcia took place in Monaco on 1 July 2016. It appears that it was agreed that: (a) Mr Rehm would join the working group; (b) the working group would work on a rule change proposal to allow athletes using prostheses to compete in World Athletics World Championships (*i.e.*, an able-bodied competition), with the aim being for the 2017 World Championships being held in August 2017 in London; and (c) Mr Rehm would not seek selection to compete in the (able-bodied) long jump competition in the Rio 2016 Olympic Games. After the meeting, World Athletics issued a press release in the following terms:

*“Germany’s Markus Rehm, the reigning IPC world long jump champion, had a meeting on Friday at the IAAF Headquarters with IAAF General Secretary Jean Garcia, the chair of the IAAF Working Group studying the generic use of prostheses in competition by athletes.*

*The discussion was extremely constructive and positive with Markus Rehm agreeing to join the IAAF Working Group, which will next meet after the Rio 2016 Paralympic Games this September, in which Rehm intends to compete.*

*As a member of the working group, Rehm and the IAAF will work together on a rule change proposal to allow athletes using prostheses to compete in a future IAAF World Championships, the aim being London in 2017.*

*Rehm, who jumped 8.40m when winning the IPC World Athletics Championships last year, confirmed he will not be seeking selection for the Rio 2016 Olympic Games”.*

11. There is no evidence from the Parties in these proceedings as to the course of that proposed rule change or the work or recommendations of the working group. Nor is there any evidence that Mr Rehm competed in the 2017 World Championships in London in August 2017.
12. In November 2017, the scientists who performed the 2016 study published a paper in Nature, a peer-reviewed scientific journal (Willwacher at al., 2017). One of the paper’s authors was Prof. Wolfgang Potthast. The paper formally reported the results of the 2016 study.
13. In advance of the 2020 Tokyo Olympic Games, the IOC and World Athletics set the qualification standard for the men’s long jump event at the 2020 Tokyo Olympic Games at 8.22m.
14. Mr Rehm competed at various events in 2021 seeking to make that qualification distance. At events organised and/or sanctioned by the DLV in May and June of this year, Mr Rehm jumped 8.47m (13 May 2021 in Bremen), 8.29m (7 June 2021 in Braunschweig at the German Athletics Championship), and 8.42m (12 June 2021 in Osterode). It is common ground that Mr Rehm competed in these events on the basis that his results would be recorded separately and that they would not be recognised. On 1 June 2021, at the World Para Athletics European Championships in Bydgoszcz, Poland, Mr Rehm set a new world record (in the T64 class) of 8.62m.
15. On 28 June 2021, the DLV proposed Mr Rehm for the men’s long jump for the 2020 Tokyo Olympic Games. The DLV wrote to the German Olympic Committee (Deutscher Olympischer Sportbund, or “DOSB”) saying *inter alia*:

*“The DLV proposes Markus Rehm as a Para athlete in the men’s long jump for Tokyo 2021, with separately listed results, unless there are three DLV athletes having fulfilled the nomination requirements (standard, world ranking) by 29.06.21.*

*In this context, the DLV maintains that Markus Rehm is excluded in accordance with Rule 6.3.4 WA Technical Rules, which is still valid and binding on the DLV as a WA national member federation. As a result, he could only participate separately from the other athletes at the 121<sup>st</sup> German Athletics*

*Championships on 05/06/21. His subsequent appeal against this was rejected. He did not become German champion in the long jump.*

*On the other hand, Markus Rehm refers to the CAS arbitral award of 23.10.2020 (CAS 2020/A/6807), according to which Rule 6.3.4 WA Technical Rules was declared invalid in the case of the US 400m runner Blake Leeper (...).*

*In the opinion of the DLV, the CAS decision of 23.10.2020 on the reversal of the burden of proof has no legally binding effect in favour of Markus Rehm (...).*

*The DLV would like to support this effort desired by Markus Rehm to be allowed to take part in the Olympic Games without being ranked - despite the different views on the current set of rules that have been pointed out. According to the current evaluation, a DLV athlete could achieve a qualification place for the Olympic Games via the new ranking system of World Athletics by 29 June 2021. Each nation can nominate up to three athletes per discipline in athletics if the nomination requirements are realised. The submitted nomination proposal is made on the basis that no DLV long jumper loses his chance to participate in the Olympic Games and in orientation to the national provision on the international competition rule 144 para. 3d, which has been in force since 2015 and is intended to allow Paralympic and Olympic athletes to start together with separate scoring. In this way, the world-class Para athlete Markus Rehm and Olympic athletes could present themselves together at the highest level in competitions despite the different mechanics of performance”.*

16. On 30 June 2021:

a. The DOSB replied saying:

*“We have examined your application for eligibility of Markus Rehm to compete in the Olympic Games 2020 in Tokyo and have come to the following assessment: The decision on eligibility belongs to the international federations, in your case to World Athletics. You should ask them for eligibility of the athlete to compete (with separately listed results) with reference to the CAS ruling in the legal dispute of Blake Leeper against World Athletics. At the same time, the DOSB would apply to the IOC for a “Universality Place” in the long jump. We can only nominate Markus Rehm if eligibility is provided and the complete nomination requirements are met. Accordingly we ask you to contact World Athletics as soon as possible”.*

b. The DLV wrote to World Athletics informing them that they, the DLV, have “recommended the [DOSB] to nominate (...) Markus Rehm to take part in the Olympic Games Tokio [sic] 2021 [sic], with the restriction that his results will be listed separately and not recognized (...). Though, under Rule 44.4 of the Olympic Charter it is to the NOC to enter competitors and transmit the entries to the OCOG, we follow the demand of DOSB and kindly ask you for approving the entry of Marcus [sic] Rehm. In this connexion we refer to your Press Release of 11-06-2021 commenting the second CAS award in Blake Leeper’s case”.

c. The DOSB wrote to the IOC informing the IOC as follows:

*“the German Athletics Association sent us a special request to receive an out-of-competition start permit for the para long-jumper Mr Markus Rehm at the Olympic Games Tokyo 2020 given the case that there are no [sic] three long jumpers from Germany without disabilities who have met the nomination criteria by 29 June 2021.*

*Mr Rehm participated (with a separate listing) at the National Athletics Championships earlier this month competing against potential Olympic athletes and fulfilled the Olympic standard of 8.22m by jumping 8.62m at the Para European Championships in Bydgoszcz (POL) on 1 June 2021. Our National Federation reiterates the decision that Mr Rehm is not allowed to compete in the same competition according to World Athletics technical rules while presenting the reasoning of Mr Rehm based on decisions by CAS regarding US bilateral transtibial amputee sprinter Blake Leeper. Ultimately, it is argued that Mr Rehm does not intend to take away any quota places, but rather seeks represent his sport at the highest level at the Olympic stage with his results listed separately.*

*Against this backdrop and considering the short term nature of this special request, we kindly ask to provide us with a final decision on the eligibility of Mr Rehm to compete at Tokyo 2020 by this Friday 2 July 2021”.*

17. On 1 July 2021, Mr Jon Ridgeon, CEO of World Athletics, replied. The letter was in the following terms (in full):

*“Thank you for your letter of the 30 June 2021, with its attachment, to the President which has been passed to me to respond to. You have requested that World Athletics approves the entry of para athletics long jumper Marcus [sic] Rehm into the athletics programme of the Olympic Games.*

*Rule 25.3 of the Competition Rules sets out that where a mechanical aid has not been authorised (ie pursuant to Technical Rule 6.3.4) by World Athletics then the athlete can only compete and have their results listed separately in international competitions other than World Athletics Series Events and the athletics programme of the Olympic Games.*

*If the athlete wishes to compete (whether or not their results are listed separately) at the Olympic Games, the athlete and the athlete’s mechanical aid must be assessed by World Athletics under Rule 6.3.4 of the Technical Rules in order to assess whether that specific mechanical aid gives the athlete in question a competitive advance [sic]. This process can take some months from when the athlete first applies for permission to use the mechanical aid and has not happened in this case. As such, the athlete is not eligible.*

*Below I set out the relevant definitions and provisions of the rules referred to in this letter.*

*I trust this clarifies the position”.*

18. By a letter dated 6 July 2021, the IOC in turn responded to the DOSB’s letter of 30 June 2021:

*“Thank you very much for your letter of 30 June regarding Markus Rehm.*

*We understand World Athletics, who are responsible for the technical and eligibility regulations for the athletic competitions at the Olympic Games, have responded on this matter on 1 July”.*

### III. PROCEEDINGS BEFORE THE COURT OF ARBITRATION FOR SPORT

19. On 15 July, 2021, the Athlete filed an appeal to the Ad Hoc Division for the Olympic Games established by the Court of Arbitration for Sport (“CAS”) seeking the following relief:

*“Markus Rehm is admitted as an entrant in the men’s long jump competition of Tokyo 2020.*

*Alternatively:*

*Markus Rehm is admitted as an entrant in the men’s long jump competition of Tokyo 2020 without listing his results and/or under separate listing of his results”.*

20. On 16 July 2021:
- a. The CAS Court Office responded noting that the jurisdiction of the CAS Ad Hoc Division was “for the resolution by arbitration of any disputes covered by Rule 61 of the Olympic Charter, insofar as they arise during the Olympic Games or during a period of 10 days preceding the Opening Ceremony of the Olympic Games” and that this dispute did not fall within that window, having arisen “before 6 July 2021, at the latest”. In the event, the dispute was “assigned to the CAS Appeals Arbitration Division in accordance with Article S20 of the Code of Sports-related Arbitration (the “Code”). As a consequence, since the present appeal shall be governed by the Provisions of the Code, Articles R47 et seq. shall apply”.
  - b. The Athlete replied and, amongst other things, requested the appointment of a sole arbitrator.
  - c. The CAS Court Office wrote to the Parties as follows: (1) it was inferred that the Athlete was seeking expedition; (2) the Respondents were asked to inform the CAS Court Office if expedition was agreed; (3) the Athlete was asked to file an Appeal Brief or, alternatively, to indicate that he wished to have his Statement of Appeal considered as his Appeal Brief; and (4) the Respondents were invited to inform the CAS Court Office whether they agreed to the appointment of a sole arbitrator.
21. On 17 July 2021, the Athlete opted to have his Statement of Appeal considered as his Appeal Brief.
22. On 19 July 2021:
- a. World Athletics agreed to expedition on two conditions, with which the Athlete agreed: (1) first, that the Athlete confirmed that he was relying on his Statement of Appeal as his

Appeal Brief and that he would file no further evidence; and (2) second, that World Athletics have until midnight on 19 July 2021 to file its Answer. World Athletics also proposed that the Sole Arbitrator be James Drake QC.

- b. World Athletics duly filed its Answer dated 19 July 2021.
  - c. IOC agreed to expedition and to the appointment of the Sole Arbitrator. The IOC indicated that it would not file a separate brief but would adopt the position(s) taken by World Athletics.
  - d. The Athlete agreed to the appointment of the Sole Arbitrator.
23. On 20 July, 2021 the CAS Court Office informed the Parties of the appointment of James Drake QC as the Sole Arbitrator.
  24. On 20 and 21 July 2021, the Parties signed and returned the Order of Procedure. In it, the Parties confirmed *inter alia* that CAS had jurisdiction over this dispute.
  25. On 21 July 2021, a remote hearing was held in this matter. The Panel was assisted throughout the hearing by Mr Giovanni Maria Fares, Counsel to the CAS, and joined by the following:
    - a. For the Appellant: Dr Michael Lehner (Counsel); Mrs Viviani Tambini Stollwerck (Counsel); Prof. Wolfgang Potthast (Expert Witness); Mr Johannes Funken (Assistant to Prof. Potthast); Mr Robert Harting (Athlete); Mr Markus Rehm (Appellant).
    - b. For the First Respondent: Mr Jean-Pierre Morand (Counsel).
    - c. For the Second Respondent: Mr Jonathan Taylor QC (Counsel); Mr Chris Lavey, (Counsel); Mr Vijay Parbate (World Athletics, Lead Counsel- Sports Law and Governance); Prof. Peter Weyand (Expert Witness).

#### **IV. SUMMARY OF THE PARTIES' SUBMISSIONS AND EVIDENCE**

26. The submissions made and evidence adduced by the Parties are summarised below. While the Sole Arbitrator has considered all the facts, allegations, legal arguments and evidence submitted by the Parties in the present proceedings, it refers in this Award only to the evidence and submissions it considers necessary to explain its reasoning.

#### **V. THE ATHLETE'S SUBMISSIONS AND EVIDENCE**

27. As noted above, the Athlete's principal request for relief is that he be admitted as an entrant in the men's long jump event of the 2020 Olympic Games in Tokyo. The submissions made by the Athlete in support of that requested relief may be summarised as follows.



28. The starting point is that the Athlete has met, indeed exceeded, the Olympic qualification distance of 8.22m. In particular, on 1 June 2021, at the World Para Athletics European Championships in Bydgoszcz, Poland, Mr Rehm set a new world record (in the T64 class) of 8.62m, such that, so it is submitted, he has qualified and should be allowed to compete.
29. On the strength of that jump, the DLV has nominated Mr Rehm to the DOSB. For its part, the DOSB directed Mr Rehm to ask World Athletics on the basis that it was a matter for them as to whether or not Mr Rehm was “eligible” to compete. Mr Rehm did just that and yet World Athletics has denied him that opportunity on the basis that “*the athlete and the athlete’s mechanical aid must be assessed by World Athletics under Rule 6.3.4 of the Technical Rules in order to assess whether that specific mechanical aid gives the athlete in question a competitive advance*”. That decision by World Athletics was wrong and, properly understood, the rules do not operate so as to exclude Mr Rehm.
30. The decision was wrong for the following reasons:
  - a. First, Mr Rehm’s RSP is not a mechanical aid. In light of “*the right of disabled people to equality, equal treatment and no-discrimination*”, one should not characterise “*the necessary and indispensable replacement of a limb lost in an accident as a mechanical aid*” for the purposes of Technical Rule 6.3.4. He uses his RSP “*for the sole purpose of compensating the disadvantage of the limb he lost*”. The RSP should therefore be disregarded when compared to other athletes. He has met the qualifying distance and should now be “*admitted to the competition without any reservations*”.
  - b. Second, even if his RSP is a mechanical aid, since the decision CAS 2020/A/6807 (hereinafter referred to as “[CAS 2020/A/6807]”) it is a matter for World Athletics to demonstrate that Mr Rehm obtains an overall competitive advantage as per Technical Rule 6.3.4. World Athletics offered nothing at all in this respect, save for an “*unsubstantiated claim*”. In order for World Athletics to deny the right of Mr Rehm to compete, World Athletics must adduce evidence that the so-called mechanical aid provides an advantage. The mere assertion that it does so is not enough.
  - c. Third, World Athletics insists on a “*time-consuming assessment*” of the RSP but that has the effect of inverting the burden of proof under the rule by imposing some sort of requirement on the athlete to submit to assessment. It is not a matter for Mr Rehm to disprove an assertion; it is a matter for World Athletics to prove that (a) Mr Rehm uses a mechanical aid and (b) that such mechanical aid provides him with a competitive advantage. Absent such proof, World Athletics has no power to exclude an athlete from competition.
  - d. Fourth, and in any event, Mr Rehm does not obtain an overall competitive advantage by using his RSP. Indeed, he “*has proved by way of a comprehensive scientific study that in consideration of all circumstances which might influence his performance as the user of a necessary prosthesis, there is no evidence of such prosthesis providing him with an advantage over other athletes*”. The scientific study relied upon by Mr Rehm is the press release (see [7] above) issued in June 2016 by German

Sport University, Cologne, the University of Colorado, Boulder, and the National Institute of Advanced Industrial Science and Technology, Japan and is entitled: *“Biomechanical comparison of the long jump of athletes with and without a below the knee amputation”* (the lead scientist on the study was Prof. Wolfgang Potthast).

e. It was submitted on behalf of Mr Rehm that:

*“The study comes to the conclusion that a disadvantage was found for users of a prosthesis during the run-up phase but that they have an advantage in the take-off phase which, however, does not overcompensate the disadvantage. In any case, the result of this study clearly shows that based on the evaluation of biomechanical data, it cannot be established that Markus Rehm’s prosthesis provides him with an overall competitive advantage over an athlete not using such a mechanical aid”.*

f. In light therefore of the conclusion of the study, Mr Rehm (despite the onus not being on him) has proven that his RSP does not provide him with an overall competitive advantage and that, accordingly, he should be free to compete in Tokyo.

31. As is noted above, the Athlete seeks the following relief:

*“Markus Rehm is admitted as an entrant in the men’s long jump competition of Tokyo 2020.*

*Alternatively:*

*Markus Rehm is admitted as an entrant in the men’s long jump competition of Tokyo 2020 without listing his results and/or under separate listing of his results”.*

## **VI. THE RESPONDENTS’ SUBMISSIONS AND EVIDENCE**

32. The First Respondent by and large adopted the submissions and evidence proffered by the Second Respondent. In addition, it was submitted on behalf of the IOC that the underlying issue in this case - *i.e.*, at its broadest, whether or not a disabled athlete ought to be permitted to compete with able-bodied athletes at the Olympic Games - was especially complex and difficult and that this was not the appropriate forum for its determination.

33. The overarching position taken by World Athletics is as follows:

*“World Athletics’ Technical Rules are clear, and the CAS has confirmed in cases brought under those rules, that athletes may not use prosthetic blades in place of amputated limbs in World Athletics’ competitions (including athletics competitions at the Olympic Games) unless it has been determined following assessment that they do not give the user a competitive advantage that he would not have if he did not have to use the blade. The reason is obvious: to preserve the integrity of the competition, World Athletics must ensure that the outcome is determined by natural talent and determination alone”.*

34. The Athlete’s appeal suffers, so it is submitted, from four fatal flaws.

35. First, Mr Rehm has not achieved the qualifying standard. It is accepted that the Athlete jumped 8.62m at the World Para Athletics European Championships in Bydgoszcz, Poland. But, as is set forth in the *“Qualification System”* issued by the IOC and World Athletics in respect of athletics events at the 2020 Tokyo Olympic Games, *“All performances must be achieved during competitions organised authorised by World Athletics during the qualification (...), its Area Associations or its National Federations in conformity with World Athletics Rules”*. The World Para Athletics European Championships in Bydgoszcz, Poland was not such a competition but was organised by World Para Athletics. Mr Rehm’s jump of 8.62m does not therefore amount to a qualifying jump for the purposes of the 2020 Tokyo Olympic Games.
36. In this respect it is also accepted by the Respondents that Mr Rehm had achieved the qualifying distance in other jumps at other events that were qualifying events, namely events organised and/or sanctioned by the DLV in May and June 2021, at which Mr Rehm jumped 8.47m, 8.29m and 8.42m. However, Mr Rehm competed in those events on the basis that his results would be recorded separately and would not be recognised. In the circumstances, none of these jumps is to be characterised as a qualifying jump for the purposes of 2020 Tokyo Olympic Games.
37. Second, the DLV nominated Mr Rehm in a qualified manner. According to the terms of the letter from the DLV, *“The submitted nomination proposal is made on the basis that no DLV long jumper loses his chance to participate in the Olympic Games”*. As it happens, if Mr Rehm were permitted to compete in the men’s long jump competition that would deny another German athlete, Mr Fabian Heinle, the opportunity to compete at the 2020 Tokyo Olympics. This is because *“the 32 person quota for the competition is now full”* and Mr Heinle is 32<sup>nd</sup> on that quota, such that if Mr Rehm were included then Mr Heinle would be excluded. In the circumstances, the qualified nomination was not effective.
38. Third, Mr Rehm failed to apply to World Athletics for permission to use his RSP and failed to cooperate with World Athletics in the assessment of his RSP. This was in breach of the World Athletics Competition and Technical Rules. In the circumstances, World Athletics has had no opportunity to assess his RSP. In this respect it was said that *“Mr Rehm knows very well that he cannot compete in World Athletics competitions unless and until that assessment has been completed and the matter resolved in his favour, but has deliberately chosen not to apply to World Athletics for such permission”*. According to World Athletics, the rules require an athlete to make prior application to World Athletics for authorisation to use a mechanical aid in competition. In the absence of a timely application to World Athletics for authority / permission to use a mechanical aid - timely in the sense that it is made well in advance of any competition so as to allow World Athletics to conduct an assessment of the athlete and the mechanical aid - no athlete is permitted to compete with that mechanical aid. This is the effect, so it was submitted, of Rule 25.3 of the Competition Rules and Rule 6.3.4 of the Technical Rules.
39. Fourth, in any event, *“the evidence in the record is very clear that Mr Rehm does get an overall competitive advantage from his RSP”*. This is demonstrated by the scientific study relied upon by the Athlete which in fact concluded that he did obtain a clear competitive advantage when using his RSP

in the long jump (see the final report for that study which was published in the peer-reviewed Nature in November 2017). It is further demonstrated by the expert opinion of Prof. Weyand (Professor of Applied Physiology and Biomechanics at Southern Methodist University, Dallas, Texas) whose opinion was as follows (internal cross-references removed):

- a. *“Long jump performance depends upon running velocity at take-off and velocity while travelling through the air.*
- b. *Sprinting speed depends in part on generation of vertical ground force reaction. Although the RSP limb may apply slightly less ground force, the amputee will apply greater force from the other leg to compensate, so that overall there is no difference in vertical forces generated between amputee and non-amputee athletes. Furthermore, the asymmetrical force application does not impair sprint performance. As a result, use by a unilateral transtibial amputee of a single RSP does not impair maximum sprinting speed and so does not impair running velocity at take-off.*
- c. *Single amputees overwhelmingly choose to jump off their RSP rather than their intact leg, indicating they believe it is performance enhancing to do so. And the evidential data clearly substantiates that performance advantage: likely due to the lower mass of the prosthetic leg compared to an intact leg, as well as the smooth curvature of the bottom of the carbon fibre blade, the amputee jumper experiences much lower horizontal braking force than the non-amputee jumper, and therefore much less loss of horizontal velocity. That advantage can be quantified. For example, in Mr Rehm’s case, the study he has relied on in his submission to CAS showed that his RSP increased his jump distance (compared to the seven non-amputee jumpers in the study) by 0.4 m (40 cm).*
- d. *It is therefore very clear, in my opinion, that Mr Rehm obtains an overall competitive advantage from his RSP that is not available to non-RSP users and that would not be available to him if both of his legs were intact and so he did not use an RSP”.*

40. In its Answer, the Second Respondent requested the following relief:

*“5.1 For the reasons set out above, World Athletics respectfully asks the CAS Panel:*

*5.1.1 to dismiss Mr Rehm’s appeal in its entirety, without granting him any relief;*

*5.1.2 to order Mr Rehm to pay the arbitration costs falling within CAS Code Article R64.4, including reimbursing World Athletics for the 4,500 Swiss Francs that it has been required to pay as an advance on those costs.*

*5.2 On the basis that Mr Rehm has not asked the CAS Panel to shift any of his legal or other costs to World Athletics, World Athletics in turn is content to bear its own legal and other costs and therefore does not seek an order requiring Mr Rehm to contribute to the payment of those costs”.*

41. The First Respondent did not submit an Answer but did adopt the position taken and the submissions made by the Second Respondent.

## VII. JURISDICTION

42. Article R27 of the CAS Code provides as follows:

*“These Procedural Rules apply whenever the parties have agreed to refer a sports-related dispute to CAS. Such reference may arise out of an arbitration clause contained in a contract or regulations or by reason of a later arbitration agreement (ordinary arbitration proceedings) or may involve an appeal against a decision rendered by a federation or sports-related body where the statutes or regulations of such bodies, or a specific agreement provide for an appeal to CAS (appeal arbitration proceedings)”.*

43. It is common ground that this dispute is subject to the World Athletics Disputes and Disciplinary Proceedings Rules (in force from 1 November 2019) and that Rule 3.1 therein confers on CAS the exclusive jurisdiction to hear this matter, as is reflected in the Order of Procedure signed by the Parties.

44. Rule 3.1 of the World Athletics Disputes and Disciplinary Proceedings Rules provides in relevant part as follows:

*“This Rule 3 relates to any legal dispute of any kind whatsoever arising between World Athletics on the one hand and any Member, Area Association, athlete, athlete support personnel or other person who is subject to the Constitution and/ or any of the Rules or Regulations on the other hand, in relation to the Constitution and/ or any Rule or Regulation and/ or any World Athletics decision or act or omission, howsoever arising, that is not covered by the dispute resolution provisions of the Constitution or any Rules or Regulations (each, a “Dispute”). Subject to, and in accordance with Article 84 of the Constitution, a Dispute shall be submitted to arbitration before the CAS (Ordinary Arbitration Division or Appeal Arbitration Division, depending on the circumstances of the case), to the exclusion of any other court or forum. The CAS will hear and determine the Dispute definitively in accordance with relevant provisions of the CAS Code of Sports-Related Arbitration. The law governing the Dispute will be the Constitution and Rules and Regulations, with the laws of Monaco applying subsidiarily. Unless the parties agree otherwise, the arbitration proceedings before the CAS will be conducted in the English language before a Panel consisting of three arbitrators. Pending determination of the Dispute by the CAS, any provision of the Constitution or Rule or Regulation or decision or act or omission under challenge will remain in full force and effect unless the CAS orders otherwise. The ultimate decision of the CAS on the merits of the Dispute will be final and binding on all parties, and all parties waive irrevocably any rights they might otherwise have to any form of appeal, review or other challenge in respect of that decision, except as set out in Chapter 12 of Switzerland’s Federal Code on Private International Law”.*

## VIII. ADMISSIBILITY

45. Article R49 of the Code provides in part as follows:

*“In the absence of a time limit set in the statutes or regulations of the federation, association or sports-related body concerned, or in a previous agreement, the time limit for appeal shall be twenty-one days from the receipt of the decision appealed against”.*

46. The decision appealed against was issued on 1 July 2021. Mr Rehm's appeal was filed on 15 July 2021. It is common ground that the appeal was filed in time and that the appeal is admissible. This too was confirmed by the Parties in the Order of Procedure.

## IX. APPLICABLE LAW

47. The Sole Arbitrator notes the following provisions in relation to the law applicable to this dispute:
- a. Article 187 of the Swiss Private International Law Act provides that *"the arbitral tribunal shall rule according to the law chosen by the parties"*.
  - b. Article R58 of the CAS Code provides as follows (in relation to appeals): *"The Panel shall decide the dispute according to the applicable regulations and, subsidiarily, to the rules of law chosen by the parties or, in the absence of such a choice, according to the law of the country in which the federation, association or sports-related body which has issued the challenged decision is domiciled or according to the rules of law that the Panel deems appropriate. In the latter case, the Panel shall give reasons for its decision"*.
48. Article Rule 3.1 of the World Athletics Disputes and Disciplinary Proceedings Rules is set out above. It is common ground that, by it, the Parties have chosen that the merits of the dispute will be decided according to the constitution and rules and regulations of World Athletics with the laws of Monaco (*i.e.* the laws of the country in which World Athletics is domiciled) applying subsidiarily. This too was confirmed by the Parties in the signed Order of Procedure.

## X. MERITS

49. The Athlete appeals against the decision of World Athletics set forth in a letter dated 1 July 2021 to the effect that the Athlete *"is not eligible"* to compete in the long jump competition at the Tokyo Olympic Games.
50. As a general matter, the IOC submitted that this was not the appropriate time or place to make what is, in effect, a determination of the complex issue as to whether a disabled athlete should be permitted to compete at the Olympic Games. With this the Sole Arbitrator agrees. This matter, as with that relating to Mr Leeper before it, throws up a kaleidoscope of difficult and complex legal, moral, philosophical and social questions that should be determined by all stakeholders in a considered and careful manner. And yet, despite the clear expressions of concern by the Panel in CAS 2020/A/6807, there has been no attempt that has reached the light of day on the part of World Athletics to put in place a protocol of some sort that provides a fair means to address the use, in particular, of RSPs by amputee athletes. This is all the more troubling in the context of this dispute given the history of matters with Mr Rehm, not least the discussions with Mr Rehm in 2016 and the formation by World Athletics of a working group

in 2016 to deal with the question of Mr Rehm's participation in able-bodied events (in which working group Mr Rehm was invited to participate), and yet there has been no apparent progress in the five years that have elapsed.

51. Matters are not at all helped by the terms of the decision rendered by World Athletics in this case. As noted, the decision of World Athletics set forth in a letter dated 1 July 2021 was to the effect that the Athlete "*is not eligible*" to compete in the long jump competition at the Tokyo Olympic Games. The eligibility of athletes to compete is governed by the World Athletics Eligibility Rules (in force from 1 November 2019). Under those rules, the definition of an "*Eligible Athlete*" is as follows: "*An athlete is eligible to compete [sic] they agree to abide by the Rules and has [sic] not been declared ineligible*". Allowing for the infelicitous drafting, this rule is taken to read as follows: "*An athlete is eligible to compete if he or she agrees to abide by the Rules and has not been declared ineligible*". Despite the terms of the 1 July 2021 letter from World Athletics, there was no attempt, in that letter or since, on the part of World Athletics to justify its decision on the basis that Mr Rehm had been declared ineligible on the application of the Eligibility Rules (it was not being used in the sense that Mr Rehm had failed to qualify because, at that stage, that was not a basis for the decision).
52. Instead, the World Athletics decision of 1 July 2021 was grounded on Mr Rehm's so-called failure to make an application to World Athletics for "*permission*" to use his RSP at the 2020 Tokyo Olympics. Indeed, this is how World Athletics framed its Answer, contending that there was a failure by Mr Rehm "*to apply for permission and submit to assessment*".
53. The difficulty with the letter of 1 July 2021 and with the subsequent submission is that there is no such obligation on the part of an athlete anywhere in any of the rules promulgated by World Athletics and there was no such obligation on Mr Rehm; and, insofar as this formed a basis for the decision by World Athletics, it must be rejected as misconceived. As was observed in CAS 2020/A/6807, if an athlete submits a request to World Athletics seeking permission, say, to use a certain item of equipment, it makes eminent sense for an athlete to allow World Athletics time to form a view as to such equipment and to cooperate with World Athletics in such a process – but that is not to say that the rules impose an obligation (contractual or otherwise) on the athlete to seek such permission. Instead, as was observed in CAS 2020/A/6807, the technical rule in question here, Technical Rule 6.3.4, is an *in-competition* rule with its own protocol for adherence and appeal (and no appeal in respect of a decision made thereunder is permitted to CAS). It neither provides for, nor contemplates, any sort of prior application by an athlete for permission to use a 'mechanical aid' in competition. The submission therefore on the part of World Athletics that it is "*entitled to a ruling that Mr Rehm may not compete unless and until he submits to an assessment of his RSP and a determination is reached that it does not give him an overall competitive advantage*" is wholly unsupported by any rule and is misconceived.
54. Nevertheless, the Parties have proceeded on the basis that the antecedent permission by World Athletics is necessary (or desirable) so as not to run afoul of the difficult to understand, more difficult to apply, Technical Rules insofar as they relate to amputee athletes and prostheses.

55. In the circumstances, and in light of the submissions outlined above, the following issues arise for determination on this appeal.

A. Has Mr Rehm qualified for the long jump event in Tokyo?

B. Is the nomination by DSV and DOSB of Mr Rehm effective?

C. Is Mr Rehm's RSP is a mechanical aid for the purposes of Technical Rule 6.3.4?

D. Does Mr Rehm's RSP provide him with an overall competitive advantage over an "*athlete not using such an aid*" and thus fall foul of Technical Rule 6.3.4?

**A. Has Mr Rehm qualified for the long jump event in Tokyo?**

56. It is the Athlete's case that he has qualified for the long jump event at the 2020 Tokyo Olympic Games at the World Para Athletics European Championships in Bydgoszcz, Poland, where he jumped 8.62m.

57. The immediate difficulty for Mr Rehm is that, as submitted by World Athletics, the qualification system agreed between the IOC and World Athletics provided, in terms, that "*All performances must be achieved during competitions organised authorised by World Athletics during the qualification (...), its Area Associations or its National Federations in conformity with World Athletics Rules*". The World Para Athletics European Championships in Bydgoszcz, Poland was not such a competition, but was organised by World Para Athletics. This was not challenged by Mr Rehm. Mr Rehm's jump of 8.62m does not therefore amount to a qualifying jump for the purposes of the 2020 Tokyo Olympic Games.

58. Mr Rehm did not rely on them himself but World Athletics accepted that Mr Rehm had met the qualifying distance in other jumps at other events that were qualifying events, namely events organised and/or sanctioned by the DLV (a World Athletics member national federation) in May and June 2021. Mr Rehm jumped 8.47m, 8.29m and 8.42m at such events. But, as was accepted by the Athlete, he competed in those events on the basis that his results would be recorded separately and would not be recognised. In the circumstances, none of these jumps is to be characterised as a qualifying jump for the purposes of 2020 Tokyo Olympic Games.

59. The stark consequence of these determinations is that Mr Rehm has not qualified for the 2020 Tokyo Olympic Games and is therefore not entitled to any of the relief sought by him.

**B. Is the nomination by DSV and DOSB of Mr Rehm effective?**

60. The process for nomination of athletes for the Olympic Games works in the following way. The national federation nominates an athlete to take part in an event at the Olympic Games. The nomination must accord with established criteria (issued by the national federation) and the nomination is made to the national Olympic committee (or 'NOC'). If the nomination is



effective, the NOC enters the athlete in the relevant event in the Olympic Games. If the nomination is, for one reason or another, not effective, then the NOC is not in a position to enter the athlete.

61. In this matter, the German Athletics Federation, the DLV, nominated Mr Rehm for the long jump event at the 2020 Tokyo Olympics. As is plain on the face of the nomination, however, the DLV's nomination was qualified in that it was "*made on the basis that no DLV long jumper loses his chance to participate in the Olympic Games*".
62. Mr Fabian Heinle is another DLV long jumper. He was nominated and entered in the ordinary way and, as it so happens, was the lowest qualifier, placing him at number 32 of the quota of 32 athletes for the long jump event. It follows, coincidentally, that if Mr Rehm were to be included in the quota then Mr Heinle would have to be excluded, with the result that a DLV long jumper *would* lose his chance to participate in the Olympic Games.
63. As was submitted on behalf of the Respondents, in these circumstances the qualified nomination on the part of DLV was not effective.
64. It follows, once again, that Mr Rehm is not entitled to any of the relief sought by him.

**C. Is Mr Rehm's RSP is a mechanical aid for the purposes of Technical Rule 6.3.4?**

65. The rules promulgated by World Athletics "*are applicable to Olympic track and field competitions*" including the men's long jump. The rules invoked in this dispute are Rule 25.3 of the Competition Rules and Rule 6.3.4 of the Technical Rules.
66. Rule 6 of the Technical Rules issued by World Athletics relates, *inter alia*, to assistance. In relevant part it provides as follows:

**6. (Rule 144) Assistance to Athletes**

***Medical Examination and Assistance***

(...).

6.2 *Any athlete giving or receiving assistance from within the competition area during an event (...) shall be warned by the Referee and advised that, if there is any repetition, they will be disqualified from that event.*

***Assistance not Allowed***

6.3 *For the purpose of this Rule, the following examples shall be considered assistance, and are therefore not allowed:*

6.3.4 *The use of any mechanical aid, unless on the balance of probabilities the use of an aid would not provide them with an overall competitive advantage over an athlete not using such aid”.*

67. Rule 25.3 of the Competition Rules is in the following terms:

*“Where the applicable regulations for a competition other than under paragraph 1.1 of the International Competition definition permit the simultaneous participation of athletes: 25.3.1 competing with the assistance of another person, i.e. a guide runner; or using a mechanical aid which is not authorised under Rule 6.3.4 of the Technical Rules; their results shall be listed separately and, where applicable, their para classification shown”.*

68. The definition of “*International Competitions*” is set forth in a separate document headed “*Generally Applicable Definitions*” and, for present purposes, it is noted that it provides as follows:

*““International Competitions” means, unless otherwise specified, the following international competitions:*

*1.1 (a) Competitions included in the World Athletics Series.*

*(b) The Athletics programme of the Olympic Games”.*

69. Pausing there, it is to be noted that, by its terms, Competition Rule 25.3 does not apply to competitions included in the World Athletic Series nor to the athletics programme of Olympic Games and thus does not apply to the long jump event of the 2020 Tokyo Olympic Games. This was not addressed in submissions in these proceedings but it is assumed that, at least with respect to the Olympic Games, the applicable regulations do not (ordinarily) permit for the simultaneous participation of athletes who are receiving such assistance so the rule as to separate listing of results does not arise. In any event, in its letter of 1 July 2021 and in argument, World Athletics relied upon Competition Rule 25.3 to say that the rule provided that the mechanical aid must be ‘authorised’ by World Athletics under Technical Rule 6.3.4. But, as noted above, there is nothing in Technical Rule 6.3.4 that speaks of or to authorisation on the part of World Athletics for the use of a mechanical aid. Whatever Technical Rule 6.3.4 does, it does not do that.

70. As to Technical Rule 6, Mr Rehm submitted that his RSP is not to be characterised as a ‘mechanical aid’ as that term is used in Technical Rule 6.3.4. He says, as noted above, that where an athlete makes use of an artificial limb as a replacement for a lost limb then such a replacement prosthesis should not be regarded as a mechanical aid. With respect, that simply begs the question.

71. On behalf of the Respondents, it was accepted that there is no definition of ‘mechanical aid’ anywhere in the World Athletics rules with the consequence that it is to be understood according to its natural and ordinary meaning. The Respondents invoke a dictionary definition of ‘mechanical’ as “*operated by a machine or machinery*” and a ‘machine’ as “*a device that transmits a force or directs its application*” and argue that “*the RSP uses a spring-like carbon fibre blade to minimise*

*energy loss, maximise energy return, and so deliver significant forward propulsion*". It is said "therefore" that the RSP is a mechanical aid. But even if those characteristics of the RSP are accepted, it does not necessarily follow – *i.e.*, there is no therefore – that the RSP is a mechanical aid.

72. It was submitted by World Athletics that it was agreed by the parties and accepted by the tribunal in CAS 2020/A/6807 that an RSP is, for the purposes of Technical Rule 6.3.4, a mechanical aid. It is right to say that this was agreed by the parties in CAS 2020/A/6807 and that the tribunal in CAS 2020/A/6807 proceeded on that basis. It is, however, not right to say, if that is the purport of the submission, that the question was decided in CAS 2020/A/6807.

73. This issue arose indirectly in CAS 2008/A/1480, in that in that case there was a measure of debate as to whether [the Appellant]'s RSPs were a "technical device" for the purposes of the then iteration of the same rule ("*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*"). This is what the panel said there:

*"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"*.

74. Once again therefore the matter was not decided but assumed.

75. In the circumstances of this case, and in particular in the absence of full argument on the question, the Sole Arbitrator is likewise prepared to assume that an RSP, indeed Mr Rehm's RSP, is as a matter of definition a 'mechanical aid' for the purposes of Technical Rule 6.3.4. But the matter is far from free from doubt and this award is not to be taken as having decided the issue.

**D. Does Mr Rehm's RSP "provide him with an overall competitive advantage over an athlete not using such an aid" and thus fall foul of Technical Rule 6.3.4?**

76. On the assumed basis, therefore, that Mr Rehm's RSP is a mechanical aid for the purposes of Technical Rule 6.3.4, does his use of the RSP provide him with an overall competitive advantage over an athlete not using such an aid?

77. On this issue, the burden of proof falls on World Athletics and the standard of proof is on the balance of probabilities. This was accepted by the Respondents (and in any event is clear from CAS 2020/A/6807).

78. CAS 2020/A/6807 addressed the manifest obscurities in the language of this rule (see [300]ff) and provided guidance as to how the rule was to be interpreted in a logical, principled and workable manner:

*“310. Having regard to these factors, the Panel concludes that the only logical, principled and workable construction of the Rule is one that, in the case of disabled athletes who use a mechanical aid to overcome a disability, requires a comparison to be undertaken between the athlete’s likely athletic performance when using the mechanical aid and their likely athletic performance had they not had the disability which necessitates the use of that aid. A disabled athlete who uses a mechanical aid which does no more than offset the disadvantage caused by their disability cannot be said to have an “overall competitive advantage” over a non-disabled athlete who is not using such an aid. In such a case, the mechanical aid does no more than counteract a disadvantage which the able-bodied athlete does not share. Conversely, a disabled athlete who uses a mechanical aid which does not merely offset the disadvantage caused by their disability, but enables the athlete to achieve better overall performances than they would have achieved had not had that disability, can be said to have an “overall competitive advantage”.*

*311. Accordingly, the Panel concludes that the question whether a particular disabled athlete will derive an “overall competitive advantage” through the use of a mechanical aid can only be answered by comparing (a) the performance that the athlete is actually capable of achieving while running with their disability and their mechanical aid; and (b) the performance they would hypothetically have been capable of achieving in the same event if they were running without that disability and without that aid”.*

79. That then is the question to be asked and answered here with respect to Mr Rehm – *i.e.* with respect to only to Mr Rehm and only to his RSP.
80. In the result, there is no doubt in the mind of the Sole Arbitrator that, on the evidence adduced by the Parties in these proceedings, World Athletics has discharged its burden to the requisite standard and that, on the balance of probabilities, Mr Rehm does derive an overall competitive advantage in the long jump performance as a result of using his RSP. The reasons for saying so are as follows.
81. First, it was common ground between Prof. Potthast and Prof. Weyand that long jump performance depends principally upon two elements: (a) running velocity at take-off and (b) velocity while travelling through the air.
82. Second, it was common ground between the scientists that, as to the latter, the evidential data shows that the use of an RSP in the long jump provides a significant advantage at the take-off and hence for velocity while travelling through the air. It was agreed by Prof. Potthast and Prof. Weyand that there was a much lower horizontal braking force at the impact of the take-off which was likely due to the lower mass of the prosthetic leg compared to an intact leg, as well as the smooth curvature of the bottom of the carbon fibre blade. As explained by Prof. Potthast, the amputee long jumper using an RSP enjoyed an advantage in the take off in that the athlete had a *“much higher take off efficiency, in that they had more energy after the take off than before”* – in contrast

with the non-amputee long jumper who suffered a loss of energy. Moreover, it was common ground that, in Mr Rehm's case, his RSP increased his jump distance (compared to the seven non-amputee jumpers in the study) by a significant amount: Prof. Potthast (and the 2016 study) calculated the theoretical advantage for Mr Rehm over the mean value of the non-amputee athletes 49cm while Prof. Weyand quantified it at 40 cm. This is plainly a significant advantage: by way of barometer, 41cm separated 1<sup>st</sup> from 9<sup>th</sup> place in the final of the men's long jump at the 2016 Rio de Janeiro Olympic Games.

83. Third, what there was disagreement about was whether or not there was any disadvantage in the running velocity at take-off that offset this agreed-upon advantage. In this respect, Mr Rehm relied upon the 2016 press release (see above at [7]) and the expert evidence of Prof. Potthast while the Respondents relied upon the final paper published in Nature reporting on the 2016 study and the expert views of Prof. Weyand.
84. In the 2016 press release it was reported that the amputee runners had slower average top speeds and slower average run-up speeds compared to the non-amputee athletes and it was concluded that *"because use of [an RSP] limits top speed and run up speed is an important determinant of jump distance, our results suggest that use [of an RSP] is a disadvantage for the long jump"*. There are one or two difficulties with respect to this statement.
  - a. First, as was submitted by World Athletics, the press release was overtaken by the more considered, peer-reviewed article in Nature in 2017 and it is that paper which, as was accepted by Prof. Potthast, should be considered when assessing the scientific questions that arise in this dispute – and that conclusory statement does not appear in the paper.
  - b. The second is, as was noted in the subsequent paper published in Nature, a critical question arises as to how much these reported run-up speeds were due to *"an intrinsically lower sprinting ability of the athlete with the [RSP] and how much was caused by a potential disadvantage induced by the use of an RSP"*. That critical question was not answered in the study.
  - c. The third is that, as noted in the paper, long jump athletes do not accelerate maximally in any event so that *"theoretical limits on force and power needed to accelerate maximally are likely to have little effect on long jump performance"*.
  - d. Fourth, the press release itself went on to say, with respect to the take-off, *"the use of a prosthesis provides an advantage"* and concluded overall that *"At this stage of the research, we cannot state that Markus Rehm's prosthesis does or does not provide him with an overall advantage"* and that continued research was needed in order to have a better understanding of the biomechanical factors at play.
  - e. Finally, the *"final conclusion"* of the authors was that the biomechanics of the take-off for a below-the-knee amputee jumper was *"more effective and different"* from that of non-amputee athletes such that amputee and non-amputee athletes *"should likely compete in separate categories for the long jump"*. It is difficult to read that as a statement in support of Mr

Rehm's appeal in these proceedings by which he seeks to compete not in a separate category but in the same one.

85. Turning to the (formal) paper published in Nature, the principal concern there was with respect to limits on maximum constant sprinting speed which were said to "*be more important for long jump performance*" (more important, that is, than maximum speed). In this context, it was suggested that amputee athletes suffered from between-leg asymmetry in that there was a marked difference between the average vertical support forces (or 'ASFs') generated by the RSP on the one hand and the biological leg on the other, which asymmetry may impair maximum constant sprinting speed and therefore be disadvantageous to the amputee long jumper.
86. In his oral evidence, Prof. Potthast said that "*we see a possible disadvantage in the run up*" velocity. This he put down to two things, each of which he said impaired run up speed: (a) the between-leg asymmetry experienced by athletes using an RSP; and (b) the lower ground reaction forces ('GRFs') than an athlete using an RSP was able to generate due to the greater flexibility/ lower stiffness of the RSP when compared with a biological leg. Prof. Potthast was not able, however, to quantify the relative contribution of speed to the overall jump distance and was not therefore able to quantify the possible disadvantage.
87. It is at once notable that the expert evidence of Prof. Potthast did not, in fact, go so far as to say that Mr Rehm did not obtain an overall competitive advantage as a result of using his RSP in the long jump event. Rather, he was careful to say that (a) an amputee long jumper did have an advantage on take-off and (b) there was "*a possible disadvantage in the run up*" velocity but not one that he could quantify.
88. As to the two matters identified by Prof. Potthast, it was accepted by Prof. Weyand that an RSP generates "*slightly less*" ground forces than an intact limb but he disagreed with the conclusion that this meant an impairment of speed. His view was that the data did not establish whether the force applied by either the RSP or the biological leg of the amputee athlete deviated from normative force application values published for high-speed running in athletic runners. On cross-examination, Prof. Potthast agreed.
89. As to, asymmetry, Prof. Weyand's evidence was that between-leg asymmetry was common for "*swift*" non-amputee athletes (Usain Bolt being a famous example) and there was no evidence that such between-leg asymmetries "*impair sprint running speeds in these non-amputee athletes*". Moreover, it was his view the asymmetry did not give rise to a force *deficit* merely a force *difference*, *i.e.*, there was a difference in the forces applied by each leg but that the overall force was not diminished, and that athletes compensated for the asymmetry by generating more force in the 'other' leg, whether biological or RSP. He also pointed out that the paper itself noted that Mr Rehm's between-leg asymmetry is "*less pronounced and may be within normal ranges for non-amputees*". It follows that, even if there was something in the point that between-leg asymmetries in amputee athletes were capable of impairing speed, that did not apply to Mr Rehm. According to Prof. Weyand, however, the modest (asymmetrical) difference in force between the RSP and the biological limb did *not* result in impairment of speed and, indeed, there was no evidence in

support of the proposition that top sprinting speed of single amputee athletes was impaired. In Prof. Weyand's view *"the presence of a single, transtibial prosthetic limb neither enhances nor reduces the maximum sprinting speeds of the amputee athletes who run with them"*.

90. In Prof. Weyand's view, it was right to say that sprinting speed was crucially important for long jump performance and that the available evidence supports a direct relationship between top sprinting speed and long jump performance so that, if the sprinting speed of a unilateral transtibial amputee athlete such as Mr Rehm was impaired by reason of the RSP then that would have a negative effect on performance. For Prof. Weyand, the finding in the 2016 study that the amputee athletes were slower was explicable not by impairment brought about by the RSP but instead to an inherent bias in the samples drawn from the different populations; *i.e.* the speed differences between the non-amputee and the amputee sprinters *"are all but certainly attributable to the greater availability of high-level, individual athletes in the vastly larger non-amputee population rather than indicating speed impairment through the use of RSPs"*. This of course both makes perfect sense but also builds on the concession in the published paper to the effect that the sprinting difference may be attributable to natural talent.
91. Prof. Weyand's (clear and clearly expressed) conclusions were:
  - a. The use by Mr Rehm of a his RSP does not impair his maximum sprinting speed and so does not impair his running velocity at take-off.
  - b. The use by Mr Rehm of a his RSP does provide him with a significant advantage with respect to velocity while travelling through the air – calculated at 40 cm.
  - c. Mr Rehm obtains an overall competitive advantage from his RSP that is not available to non-RSP users and that would not be available to him if both of his legs were intact and so he did not use an RSP.
92. On balance, there was nothing in the evidence adduced by Mr Rehm to displace these conclusions and the expert evidence of Prof. Weyand is to be preferred. It was (very fairly) accepted by Mr Rehm that he enjoyed a significant advantage on the take-off as a result of using his RSP, but the scientific evidence adduced by him did not establish that his RSP brought about any impairment of sprinting speed in the run-up and certainly not to such an extent that the resultant disadvantage outweighed the significant advantage. Prof. Weyand's conclusions are accepted as a fair and considered account of the underlying biomechanics in issue.
93. It is therefore the Sole Arbitrator's view that the scientific evidence does show, on the balance of probabilities, that the use by Mr Rehm of his RSP in the long jump event does provide him an overall competitive advantage over an athlete not using such aid.
94. In consequence, on the assumed basis that Mr Rehm's RSP is to be characterised as a 'mechanical aid' under Technical Rule 6.3.4, Mr Rehm's RSP does, on the balance of

probabilities, provide him with an overall competitive advantage and therefore does amount to impermissible assistance.

**E. Conclusion on the Merits**

95. For the aforesaid reasons, the appeal is unsuccessful and Mr Rehm is not entitled to any of the relief that he seeks.

**ON THESE GROUNDS**

**The Court of Arbitration for Sport rules that:**

1. The appeal filed by Mr Markus Rehm against International Olympic Committee and World Athletics seeking a decision that Mr Rehm be admitted as an entrant in the men's long jump competition at the Games of the XXXII Olympiad - Tokyo 2020 is hereby dismissed.
2. (...).
3. (...).
4. All other motions or prayers for relief are dismissed.