**Point-by-point response**

**Editorial comments:**  
Changes to be made by the author(s) regarding the written manuscript:  
1. Please take this opportunity to thoroughly proofread the manuscript to ensure that there are no spelling or grammar issues. The entire manuscript has been proofread.

2. Figure 4 and Table 1: Please obtain explicit copyright permission to reuse any figures from a previous publication. Explicit permission can be expressed in the form of a letter from the editor or a link to the editorial policy that allows re-prints. Please upload this information as a .doc or .docx file to your Editorial Manager account. The Figure must be cited appropriately in the Figure Legend, i.e. “This figure has been modified from [citation].” Copyright approval has been obtained for figure 4. This approval has been uploaded together with the revised manuscript. A new figure (figure 5) has been added instead of Table 1 and has also been uploaded. This figure contains graphs from another article and an additional approval has been obtained from this journal site. This approval has also been uploaded with the revised manuscript.

3. Please revise the title to be more concise. Title has been revised, title page line 2

4. JoVE cannot publish manuscripts containing commercial language. This includes trademark symbols (™), registered symbols (®), and company names before an instrument or reagent. Please remove all commercial language from your manuscript and use generic terms instead. All commercial products should be sufficiently referenced in the Table of Materials and Reagents. You may use the generic term followed by “(see table of materials)” to draw the readers’ attention to specific commercial names. Examples of commercial sounding language in your manuscript are: EyeSeeCam (Interacoustics, Denmark), ICS Impulse (Otometrics, Denmark), OtoAccess, OTOsuite, etc. Trademark symbols, registered symbols and company names have been removed from the manuscript. This information is described in the table of materials and appropriate referrals to this have been added to the manuscript. The commercial software names used for both vHIT systems (OtoAccess and OTOsuite) have been removed from the manuscript and instead these specifics have been added to the table of materials. As no generic names for the two separate vHIT systems included in the manuscript exist, both the term EyeSeeCam and ICS Impulse still appears in the manuscript. Alternatively, vHIT system A and vHIT system B may replace these terms if you do not want these terms to appear within the manuscript?

5. JoVE policy states that the video narrative is objective and not biased towards a particular product featured in the video. The goal of this policy is to focus on the science rather than to present a technique as an advertisement for a specific item. To this end, we ask that you please reduce the number of instances of " EyeSeeCam”/”ICS Impulse" within your text. The term may be introduced but please use it infrequently and when directly relevant. Otherwise, please refer to the term using generic language. Again, no generic term exists to replace these two separate vHIT products. Alternatively, the abbreviation ESC or system A may be used for the EyeSeeCam vHIT system and the abbreviation ICS or system B may be used for ICS Impulse vHIT system?

6. Please include an ethics statement before the numbered protocol steps, indicating that the protocol follows the guidelines of your institution’s human research ethics committee.

This has been added before the numbered protocol steps. Page 3, line 129.

7. Please revise the protocol text to avoid the use of any personal pronouns (e.g., "we", "you", "our" etc.). This has been corrected and especially the term “you” has been removed several times.

8. Please revise the protocol to contain only action items that direct the reader to do something (e.g., “Do this,” “Ensure that,” etc.). The actions should be described in the imperative tense in complete sentences wherever possible. Avoid usage of phrases such as “could be,” “should be,” and “would be” throughout the Protocol. Any text that cannot be written in the imperative tense may be added as a “Note.” Please include all safety procedures and use of hoods, etc. However, notes should be used sparingly and actions should be described in the imperative tense wherever possible. The abovementioned fraises have been removed from the protocol.

9. 1.3: Please describe how to make a gross eye movement examination. A description of this has been added. Page 3, lines 139-140.

10. 1.4: Is any device used to evaluate the size of the pupils? No, this is only done as a subjective evaluation by the examiner by looking at the pupils.

11. 4.1: Is calibration done through the corresponding software? Please specify software steps. Yes, calibration is done through the corresponding software. Software steps have been added. Page 5, lines 199-203.

12. 5.1.1: How to deliver impulses unpredictably? Is this controlled by a computer? This is done by the examiner and not controlled by a computer or any other device.

13. 5.1.2: Please specify the typical amplitude used in this case. The amplitude has been added, page 7, line 244.

14. 6.1 and 6.1.1: Please specify the actions being performed here in the imperative tense. Has been corrected. Page 8, lines 303-307.

15. 6.3.1.1.2: Please list the numbered steps of the vHIT test here. This has been added. Page 10, lines 330-331 and lines 340-341.

16. 7.1 and sub-steps: These are not appropriate for filming. Please consider removing them from filmable content. This step and sub-steps have been removed from filmable content. Page 11, lines 362-371.

17. After you have made all the recommended changes to your protocol (listed above), please highlight 2.75 pages or less of the Protocol (including headings and spacing) that identifies the essential steps of the protocol for the video, i.e., the steps that should be visualized to tell the most cohesive story of the Protocol. This has been done and a little less than 2.75 pages in total has been highlighted.

18. Please highlight complete sentences (not parts of sentences). Please ensure that the highlighted part of the step includes at least one action that is written in imperative tense. This has been done accordingly.

19. Please include all relevant details that are required to perform the step in the highlighting. For example: If step 2.5 is highlighted for filming and the details of how to perform the step are given in steps 2.5.1 and 2.5.2, then the sub-steps where the details are provided must be highlighted. This has been done accordingly.

20. Please be consistent with whether using upper-case or lower-case letters for panel labels. This has been corrected.

21. References: Please do not abbreviate journal titles. All journal titles have been revised and now no abbreviations are found within the reference list. Pages 15 and 16

22. Please revise the table of the essential supplies, reagents, and equipment to include the name, company, and catalog number of all relevant materials including software. This has been updated and does now include the appertaining software.  
  
**Reviewers' comments:**  
  
  
  
**Reviewer #1:**  
Manuscript Summary:  
The tests are well described. I think vHIT users should be well informed prior starting with the devices. In this regard this manuscript is valuable information. In order to bring additional information compared to the multiple open access user guides and video tutorial provided by the 2 companies about their products, I suggest taking in account the following comments. I would especially recommend to add  
1. information on methods of gain calculations (be more accurate and comment each strategy), More information on the two different gain calculation methods have been added and the two strategies used have been commented. Page 2, lines 80-86.

2. which information is taken from the motion sensors (one axis?) for the gain calculation as the motion sensors are 6D This information has been added to the manuscript, page 4, lines 157-159.

3. how is the eye recording analyzed.

I have added this information (provided by the two companies) to the introduction, page 2, lines 94-99.

4. Comment on the different head/eye/visual target positions for vertical canals. This has been added to the discussion, page 15, lines 499-503.  
  
30: not 2013. Has been corrected and now it has been clarified that authors refer to *commercially available vHIT testing* of all three paired semicircular canals in 2009 and 2013.

43: of the canal system in the domain of high frequenccies. It has been added to this sentence, that the vHIT test offers objective assessment of the function of the *high frequency domain* of the vestibular system. Page 1, lines 43-44.

59: actually with the version of 2009 it was already possible to test the vertical canals… It has been corrected and specified that the version in *2009* enabled testing of all 6 semicircular canals. Page 1, line 60.

68: is this true? I think it is worth mentioning the synapsis system The VHIT Ulmer from Synapsys in France is now also mentioned as a widespread vHIT system. Page 2, lines 66-69.

70: acceleration or velocity Velocity. This has been corrected. Page 2, line 70.

92: actually the stimulus should ideally be above 150°/s , of course it can be of interest to also include lower angular velocities. This has been corrected, page 2, line 92.

126: ? Has been clarified that the examiner must conclude which eye is the optimal one for the recording of eye movements following examination of the eye. Page 3, line 145.

137: please you should use the term motion sensor or be accurate and specify what kind of motion sensors… both systems are not only equipped with gyroscopes… This has been corrected and specified, page 4, lines 157-159.

141: you should remove "try", it is important to have the dot at eye's height. An option would be to have dots at different heights “try” has been removed and the other option added. Page 4, lines 163-165.

152: Write: " ajust the googles on patient's head. It must be tightly fixed! (this is crucial) Although it should not be painful, in most cases it is not confortable… The wording has been added. Page 5, line 175.

164: ? what do you mean: to flutter with the lower eyelid The wording has been corrected and should now appear meaningful. Page 4, line 186.

182: we actually indicate which dot the patient has to look at, we remain on each dot for 2-3 sec and go through all of them wording has been changed accordingly. Page 6, line 205.

228: °/s instead of ms has been corrected. Page 7, line 252.

231: I think "predefined data algorithm" is not enough , you should define it as it is the case for the Eye See Cam. These criteria have been added for ICS Impulse. Page 7, lines 256-261.

236: here a variant: the patient can bite on a wooden tongue depressor, it had stability to the jaws. Moreover the thumbs can be positioned on the mastoid and other fingers on the mandibular. Has been added to the text in parenthesis. Page 8, lines 270-272.

246: here you should clarify and describe better the relation between target-eye-chair positions. Several combinations are used. Choose one and give arguments why it's better than other options. Ok you do it in the following points. One method has been chosen and arguments why this option is the best has been given. Page 8, lines 275-277.

297: please give a reference for the normal mean gain values 0.8-1.2 and can comment the fact that gains are >1.00. A reference has been added (ref. 7; actually table 1 p. 400 and text p. 416 in this book explains these normative data). In theory gain values cannot be above 1.00 as this indicates the peek eye velocity is higher than the peek head velocity. However, there are a lot of conditions that may affect/alter the gain values to be a little higher than expected in normal individuals. VOR gain is not a fixed immutable quantity bit it can be changed by a variety of procedures. Subjects who have worn magnifying spectacles have increased gain even when the spectacles are removed and convergence (patient to close to the target) causes higher than 1.00 gain values. Page 9, line 327 and page 10, line 337.

318: where comes this assumption from, give a reference or explain.  
321: same comment as for 318 A reference was already added in step 6.3.3 which is preceding the sub-steps listed below including the same first three numbers (6.3.3.1 and 6.3.3.2). Therefore, no additional references have been added, as this reference refers to both this step and the subsequent sub-steps.

380: Figure 2 legend: there are dots and lines, gray and black in left and middle graphs, only black dots in right. PLEASE CLARIFIY! Like described in the official user guide… Figure legend has been described as suggested and according to the manual. Page 12, lines 414-421.

389: note that the company providing eyeseecam also propose a second technique for measurement of the LARP and RALP, head turned to the right for LARP and to the left for RALP , can you comment or add this as an option? A comment has been added to the introduction, page 3, lines 125-126. An additional explanation has also been added to the figure legend describing figure 4, page 13, lines 442-444.

448-449: actually to my understanding (I might be wrong, but I doubt it…) 3D is misleading or even not correct, indeed the analysis of the video recording is 2 D in both systems. The difference is that in the ICS system by using the proposed eye position relative to head the torsion component is minimized. That is correct in terms of the analysis. Both these vHIT test systems measure eye movements in only 2 dimensions. The original test method was, however, termed the 3D test method. This term was therefore chosen for this type of testing.

To be correct all eye movements should be described in 3 D (cf ref ROBINSON), nevertheless it is very tricky to capture the torsion component (without physical markers on the conjonctiva) with the current systems…therefore 2 D analysis are most often used, which is acceptable most of the time.  
  
Any way I don't think the torsion component modifies significantly the results.  
  
I recommend that you clarify this issue already in the introduction! Clarification has been added to the introduction, page 3, lines 122-124.  
  
  
**Reviewer #2:**  
Manuscript Summary:  
The authors present a detailed guide about the use of both actually most distributed vHIT devices. In this manuscript methods are perfectly detailed, clear and well redacted, this review did not noticed any preference by the authors to any of the both devices. An adequate reference to literature was also made by the authors, the discussion and conclusions are accuracy and in concordance with known scientific evidence.  
  
This reviewer did not found any relevant question to do to the authors about this text. My congratulations for this job.  
  
I only suggest to the authors to add a specific economic conflict of interest disclosure because of the two specific devices that were used in this manuscript and it is important to clarify if the authors have any kind of relation with any of the two devices manufacturers. vHIT testing at our Department is often done with both devices described in the manuscript (eyeSeeCam and ICS Impulse); especially patients exhibiting results that are non-conclusive are often tested with both devices. No economic relationship with neither of the manufacturers have led to the acquisition of these devices. As requested, a specific economic conflict of interest has now been added. Page 16, pages 538-539.