

# Fundamental studies to assess and restore vestibular function in patients with severe bilateral vestibular loss

Citation for published version (APA):

Pleshkov, M. (2022). *Fundamental studies to assess and restore vestibular function in patients with severe bilateral vestibular loss*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20220906mp>

## Document status and date:

Published: 01/01/2022

## DOI:

[10.26481/dis.20220906mp](https://doi.org/10.26481/dis.20220906mp)

## Document Version:

Publisher's PDF, also known as Version of record

## Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.umlib.nl/taverne-license](http://www.umlib.nl/taverne-license)

## Take down policy

If you believe that this document breaches copyright please contact us at:

[repository@maastrichtuniversity.nl](mailto:repository@maastrichtuniversity.nl)

providing details and we will investigate your claim.

## Propositions belonging to the thesis

### FUNDAMENTAL STUDIES TO ASSESS AND RESTORE VESTIBULAR FUNCTION IN PATIENTS WITH SEVERE BILATERAL VESTIBULAR LOSS

1. Not every patient diagnosed with bilateral vestibulopathy is eligible for vestibular implantation since it requires examination of all five vestibular end organs to ensure the implantation benefit.
2. Electro-oculography is an accurate alternative to video-oculography in head impulse testing.
3. Testing the motion thresholds in a clinical setting allows to extend the vestibular test battery from reflexes to perception. Nevertheless, each motion perception testing paradigm needs its normative values.
4. The electrical double layer of inner ear tissues, together with medium polarization, plays a significant role in the electrical impedances and should be considered in electrical conductivity models to optimize vestibular implant stimulation.
5. Artificial intelligence and deep learning should assist medical doctors in diagnosing patients.
6. Implants are becoming a reality: cybernetic organs will improve the duration and quality of human lives and extend human possibilities soon.
7. Integrating various disciplines such as information technologies, physics, mathematics, biology, and medicine is an inevitable trend of modern science. This multidisciplinary will allow scientists and experts to achieve high results in combating global health challenges.
8. The results of this research, developing a low cost diagnostic tool, providing new advanced diagnostics and basic knowledge to optimize VI technology, brings vestibular protheses close to real clinical application in patients.

Maksim Pleshkov, Maastricht, 20 March 2022