

PhD dissertation  
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## **Novel assessment and visualization of vestibular function**

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Patients with vestibular loss often complain about severe disablement. These complaints do not only occur in the adult population, but children and adolescents may also complain about vertigo. Within recent years tests of the vestibular organ has become commercially available. This includes the Suppression Head Impulse Test (SHIMP), a novel variant of the Head Impulse Test (HIMP). However, despite the recent advances in testing the subcortical reflexes and vestibular organ knowledge is still lacking regarding central vestibular processing.

### **Method**

In paper 1 the new SHIMP paradigm is tested by one experienced and one inexperienced examiner in an adolescent population.

Paper 2 and 3 uses <sup>18</sup>F-FDG PET to visualize central processing of a natural vestibular stimulation.

### **Results**

Healthy adolescents produce large SHIMP saccades (Paper 1)

Paper 2 shows that healthy participants have an increased activity in the most medial part of Heschls gyrus and the posterior part of insula during natural vestibular stimulation compared to a baseline <sup>18</sup>F-FDG PET-scan. In Paper 3 brain activity in patients with Menière's disease (MD) is compared to healthy participants, and the MD patients have a lower <sup>18</sup>F-FDG uptake in Heschls gyrus and the posterior part of insula.

### **Conclusion**

The SHIMP test proved to be feasible in adolescents and healthy adolescents produce the same saccadic patterns as observed in healthy adults.

Based on the findings in paper 2 and 3 it is hypothesized that the most medial part of Heschls gyrus represents a human primary vestibular cortex and the posterior insula a secondary association area.