Ocular vestibular evoked myogenic potentials (oVEMPs): evaluation of three different electrode positions using a minishaker (Fz).

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Introduction: Due to the recent emergence of the oVEMP test, there is still a lot of speculation about the optimal test conditions.

Objectives: In this study, 3 electrode positions (‘standard’, ‘sternum’ and ‘nose position’) were evaluated in function of the oVEMP response to bone conducted vibration (minishaker) at the Fz position.

Methods: Data from 15 normal hearing subjects (11 females, 4 males; average age = 22.7 years; range between 19 and 27 years) were obtained.

In the ‘standard position’, the active electrodes were placed approximately 0.5 cm underneath the midline of the eyes. The reference electrodes were placed 1.5 cm below the active electrodes and the ground electrode was mounted on the chin. In the ‘sternum position’ the reference electrode was placed on the sternum, while leaving the other electrodes in place. A third electrode position was the ‘nose position’. In this position the active electrodes were placed more laterally of the eyes, i.e. on the belly of the inferior oblique muscle. The reference electrodes were positioned between the medial canthi and the nostrils and the ground electrode was kept in place on the chin (see figure below).

![Figure showing electrode positions](image-url)
**Results:** A significant effect (p<0.001) of the electrode position was found on the peak-to-peak oVEMP amplitude. The largest amplitudes were measured in the nose position (35.0 (19.1) µV; mean (SD)) followed by the sternum position (27.1 (12.2) µV) and finally the standard position (15.8 (6.3) µV). There were also significant effects on n10 (p = 0.046) and p15 latencies (p<0.001), with the shortest latencies found in the nose position. None of the electrode positions revealed significant left-right differences.

**Conclusion:** Largest oVEMP responses were found in the ‘nose position, significantly increasing the sensitivity of the oVEMP.