

I-Portal® Test Battery: NOTC Head Impulse

Test Description:

The NOTC Head Impulse Test is a high acceleration rotary test performed in the I-Portal® NOTC chair to examine the high-frequency properties of the peripheral vestibular system. The seated patient will experience rotations with short, high acceleration intervals (50 to 80 ms) inside an isolated testing environment. The motion profiles include slow ramp downs to ensure patient comfort.

Clinical Outcome:

- Provides reliable and fast measurement of the vestibulo-ocular reflex for normal head movements. A patient with normal VOR gain will display eye velocity that closely mirrors chair velocity.
- Helps define and localize vestibular pathology, distinguishing between vestibular neuritis and cerebellar dysfunction.
- Evaluation of unilateral loss of horizontal semicircular canal function.

NKI test battery advantage:

The NOTC Head Impulse Test is the only computerized head impulse test available for clinical testing. This objective and repeatable test holds several advantages over the more traditional manual methods including:

- Isolated testing environment removes visual cues, providing a pure VOR stimulus.
- Controlled head movement eliminates inconsistencies introduced by manual head thrust testing.
- “S” curve acceleration and deceleration profiles ensure patient comfort and safety.
- Allows for head thrusts at randomized timing intervals and direction which improves the sensitivity of the test.
- Quantitative eye data analysis replaces difficult, qualitative eye tracking performed by the examiner.
- Can be used as a research tool; currently being used in new studies on utricle function. Includes multiple fixation options to match testing requirements.

Reimbursement:

- No current Medicare reimbursement

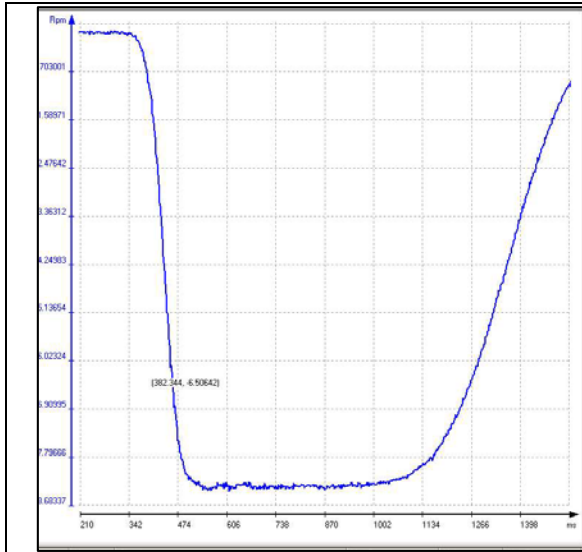
Relevant Research Articles/Books:

- Furman, Joseph M., Martini, Alessandro, and Stephens, Dafydd, Textbook of Audiological Medicine; Clinical Aspects of Hearing and Balance, 2003.
- Halmagyi, G., and Curthoys I., A Clinical Sign of Canal Paresis, 1988, Arch Neurol; 45; 737-9.
- Wuyts, F., Principle of the Head Impulse (Thrust) Test or Halmagyi Head Thrust Test (HHTT), 2008, B-ENT, 4, Suppl. 8, 23-25.

Additional Notes:

- Advanced Headrest upgrade for I-Portal® NOTC suggested. Contact NKI for quotation.
- Head thrust acceleration up to 800 deg/sec² for NOTC-S and NOTC-P (185 ft. lb motor); 1,500 deg/sec² for NOTC-C and NOTC-O (365 ft. lb. motor)

Screen Captures:



Rotation motor feedback pictured to left. Computerized testing provides reliable and repeatable test results.

- Eliminates inconsistent movement of the head by the examiner.
- “S” curve acceleration and deceleration ensure patient comfort.

VEST™ Protocol Editor allows clinician to create up to 20 motion profiles. Each profile includes:

- Direction (CW, CCW)
- Acceleration (deg/sec^2 or acceleration time and max speed)
- Peak speed (deg/sec)
- Deceleration (deg/sec^2)
- Dwell time

VEST™ Analysis provides an objective comparison of eye position and velocity with chair (head) position and velocity.

- Analysis algorithm combines and averages data from multiple cycles.
- Quantitative analysis replaces difficult, qualitative eye tracking performed manually by the examiner.
- Printable report screens can be saved in patient files.