

ICS Impulse®

Greater precision...

...faster diagnosis



The head impulse test (HIT) provides quick, clear-cut side of lesion specific assessment of the vestibulo-ocular reflex response to stimuli in the high-frequency range, the natural range of head movements. It is the only test that can assess all six semicircular canals. ICS Impulse® from Otometrics is the world's first vHIT device to combine gold-standard accuracy with unrivaled patient comfort, enabling you to perform head impulse testing with inarguable results. Fast, simple and precise, ICS Impulse is recommended as the first step in analysis, helping to improve your workflow and spend more time on patient care.

ICS Impulse: **Bringing diagnostic accuracy and efficiency into balance testing**

2008

More than 20 years of research and development

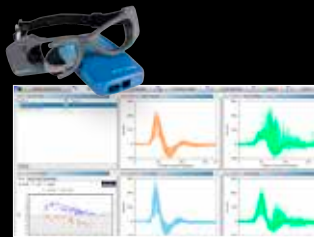
A visit to Sydney Australia creates excitement and spawns a collaboration for Otometrics. The lateral video head impulse test is proven to have comparable results as scleral search coils.



2011

Gold standard vestibular testing in the clinic

ICS Impulse is launched proving reliable lateral vHIT data is possible and introducing the new gold standard.



2012

Assess all six semicircular canals

ICS Impulse is further developed to include the anterior and posterior canals (LARP/RALP), operator feedback, and synchronized room video for the video record/playback mode.



2014

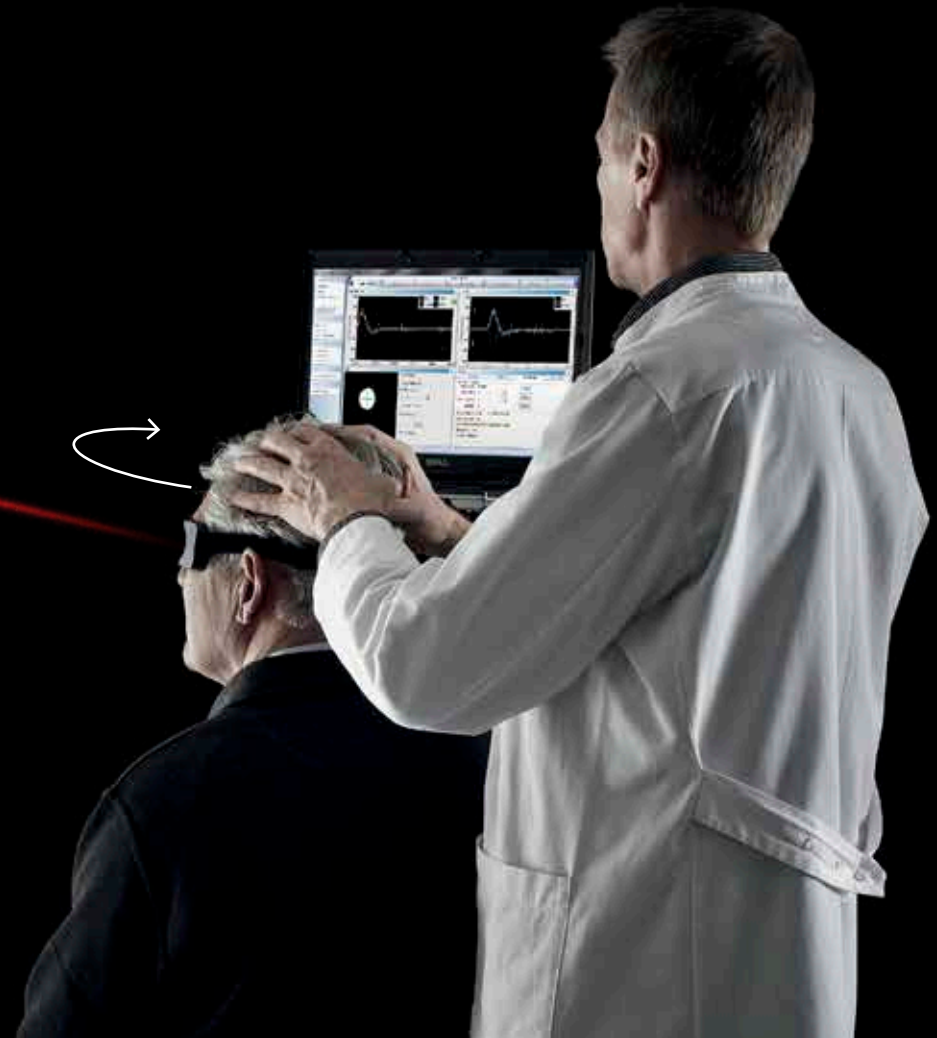
USB Impulse goggle

ICS Impulse continues to evolve with a USB goggle along with software enhancements: head position feedback for LARP/RALP, Hex plot, and high resolution vector based graphics.





BALANCE





Balancing accuracy...

...and greater efficacy



BALANCE

ICS Impulse®: A Powerful New Gold Standard in Vestibulo-ocular Reflex Assessment Approved by Drs Halmagyi and Curthoys

Otometrics has emerged with the new gold standard, ICS Impulse: an objective measurement of both head and eye movement using a fast and precise system to assess the vestibulo-ocular reflex. With unrivaled accuracy and efficacy, the ICS Impulse will forever change the way you work.

Validated against Scleral Search Coils

ICS Impulse is the only vHIT system validated against the scleral search coils and approved by Drs Halmagyi and Curthoys.

Stimuli replicating the patient's everyday situations

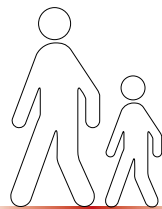
ICS Impulse provides precise, accurate data based on real-life stimuli. The high-frequency stimuli used in vHIT is similar to that used in daily activity that occurs when crossing the street, or quickly turning to a sound.

Unsurpassed diagnostic precision in less than 10 minutes

In addition to providing an accurate, objective measure of the vestibulo-ocular reflex, the ICS Impulse allows clinicians to test acute patients with spontaneous nystagmus. Both overt and covert saccades can be detected allowing for proper diagnosis and rehabilitation recommendations. The vestibular function of all 6 semicircular canals can be assessed and documented in less than 10 minutes from patient entry to reporting.

Improved Patient Care

Patient comfort is greatly enhanced by the lightest goggles in the industry. Due to the sophisticated cameras smaller velocity head impulses of only 15 to 20 degrees are used, making the test more pleasant for the patient. ICS Impulse detects more abnormalities than visual observation and reduces false negatives. And because results are known immediately, treatment can begin much sooner.



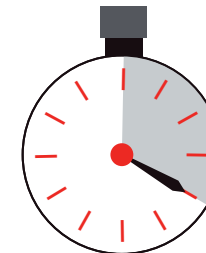
The ICS Impulse makes it possible to test children, bed-ridden patients, or anyone for which caloric testing is not an option.

What is Head Impulse Testing?

- A side of lesion specific test that detects disorders of the vestibulo-ocular reflex and identifies which ear is affected in cases of peripheral vestibular loss. Patients with a vestibular loss will exhibit a corrective saccadic eye movement (a "catch-up" saccade) either during or after the head impulse and the gain of the head in comparison to the eye will not be equivalent. Head Impulse is the only test that can assess all the semicircular canals (Lateral, Anterior, and Posterior).
- First identified and described by Halmagyi and Curthoys in the 1988 article, "A Clinical Sign of Canal Paresis." Said Halmagyi: "The eyes are the speedometers of the semicircular canals."



Watch videos of clinical applications of vHIT and of Dr. Halmagyi's classroom lectures on www.headimpulse.com



Complete your test by assessing lateral, anterior and posterior semicircular canals in less than 10 minutes



Connecting new ideas...

...to your workflow



BALANCE

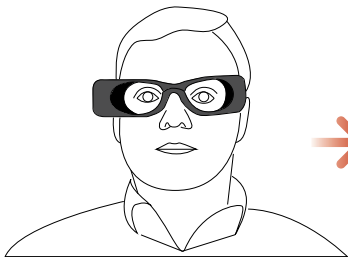
The unique attributes of ICS Impulse® bring a new flexibility and accuracy to how and where you work

Simple, worry-free operation

ICS Impulse increases test quality by displaying head velocities which assists in the performance of unpredictable head impulses. Training curves and operator feedback provide a guide to assist you in performing quality head impulses of varying velocities. Operator feedback provides immediate information when a head impulse is not performed properly. Proprietary algorithms ensure that only good data is analyzed.

Superior Pupil Detection and Fast, Simple Calibration

Superior pupil detection provides error free data. Calibration can be performed anywhere using Impulse goggles with built-in lasers. All you need is a small surface for which to project the laser dots. In seconds, you are ready to test.



The goggle has been designed for quick and easy placement. At a mere 60 grams there is no slippage. Calibration is quick and easy, using two lasers that are incorporated into the goggle itself, eliminating the need for any additional hardware.



A 15° angle is all that is required. Move the head quickly to the right or left and stop. After a short break return the head to the center, and repeat using varying velocities and unpredictable head impulses.

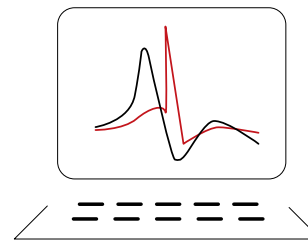
▶ Watch the ICS Impulse training videos at www.icsimpulse.com

Easier analysis and normative data

View analysis in 2D or 3D. Both display a gain graph with built-in published normative data. A 360° 3-D picture facilitates easy identification of saccades. The Hex Plot allows you to easily visualize the results from all six semicircular canals. A powerful, dedicated database stores the patient's current status and charts progress by comparing results from multiple test sessions. Comparison of test sessions allows for validation of vestibular rehabilitation success.

Extensive reporting and Data Sharing

With documentation taking away an increasing amount of time from patient care, Otometrics designed the ICS Impulse with a customized report function with vector-based graphics to meet documentation requirements. Third-party data-sharing interfaces directly with third-party EMR systems. ASCII export and raw data export is also available.

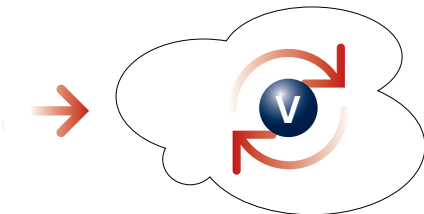


Visuals in the software provide immediate feedback on the quality of the head impulse.

How does ICS Impulse fit into your workflow?

- It's the first step towards diagnosis and subsequently early treatment. Since the head impulse test is quick and won't produce an adverse patient reaction it's recommended that the test be performed at the beginning of the assessment workflow. This easy assessment can assist in the determination if the disorder is central or peripheral. The ICS Impulse results direct you to what further testing is needed.

▶ For a comprehensive information on the clinical application of video head impulse testing, go to www.headimpulse.com/knowledge-center



Our proprietary OTOSuite® Vestibular software captures, consolidates, and saves patient measurement data, allowing comparisons of multiple sessions through the use of progress graphs and data. The software also offers multiple reporting facilities and integration with third-party systems.



Cutting-edge technology...

...tested and documented



BALANCE

Years of research bring validity to ICS Impulse®

1 High-speed USB camera (250 Hz)

The superior camera provides the best available technology for measuring fast eye movements. This provides the ability to record the eye during high-frequency head movements. Both covert and overt saccades can be identified.

2 Superior sensor

The nine axis motion sensor accurately measures the head movement allowing for direct comparison in head and eye velocities. Provides instant feedback on the quality of the head impulse maneuver. Precisely tracks head motion in free space with superior stability and response time providing instant feedback for LARP/RALP.

3 No slippage

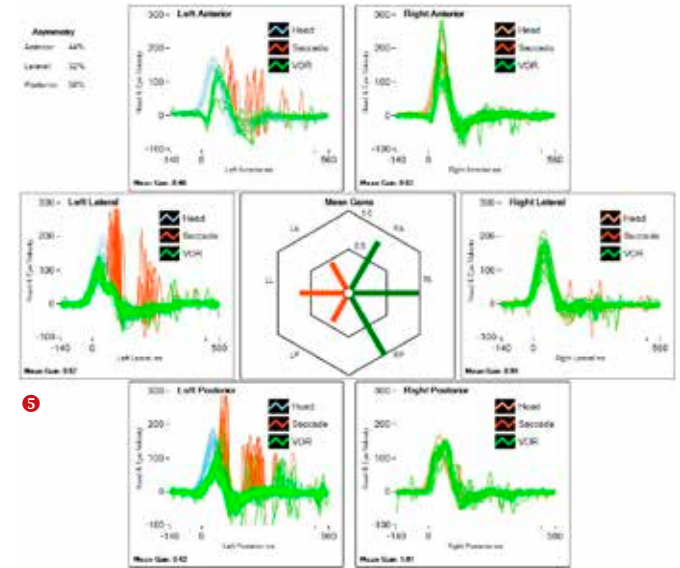
Weighing 60 grams the goggle ensures no slippage and therefore providing quality data collection without missing any important eye movements.

4 Built-in calibration lasers

The test can be performed anywhere there is a wall for calibration. There's no need for additional hardware.

5 Hex Plot

Provides an quick view of the results for all six semicircular canals.





Correct diagnosis...

...increased patient satisfaction





BALANCE

Meet us online to learn more about the features and benefits of Otometrics' ICS Impulse® and head impulse testing.

More about ICS Impulse
www.icsimpulse.com opens up a wealth of information and resources to enhance your knowledge about ICS Impulse and vHIT. A library of educational material offers ICS Impulse media announcements, testimonials by experts and e-learning options that include instructions on how to perform head impulse testing. Visit our blog and dialogue with the people behind the ICS Impulse and other balance experts.



 www.icsimpulse.com

More about head impulse testing
At www.headimpulse.com you can explore both the science and practical application of head impulse testing. The library houses research material, including videos of Dr. Halmagyi's classroom lectures and examples of vHIT test results. Access a list of upcoming events to see experts speaking on vHIT and ICS Impulse. And you can learn more about how head impulse testing works and why it has made a difference in the vestibular assessment.



 www.headimpulse.com

Features and Benefits

High speed USB camera (250 Hz)

- Ultra-sensitive, requiring head turns of just 15°
- Records fast eye movements that allow for identification of overt and covert saccades
- Test takes less than 10 minutes from patient entry to reporting

Superior Sensor

- Ensure accurate head velocity measurement
- Provide instant feedback on proper head impulse maneuver
- Precisely track head motion in free space with superior stability and response time providing instant feedback for LARP/RALP.

Built-in calibration lasers

- Calibration is quick and easy, using two lasers incorporated into the goggle itself
- No need for additional hardware
- Test can be performed anywhere

Built-in head impulse algorithms

- Developed by vHIT pioneers Drs. Michael Halmagyi and Ian Curthoys
- Inaccurate head impulse data is automatically discarded
- Only accurate data is analyzed
- Only vHIT system validated against the scleral search coils with published data for all six semicircular canals

Plug-and-go solution

- Small and compact for ultimate portability
- Easy and efficient for bedside testing
- Enables accurate testing of immobile patients

 Read about enhanced documentation of abnormalities www.icsimpulse.com

 See all the benefits of ICS Impulse online at www.icsimpulse.com

ICS® Impulse®

Bringing diagnostic accuracy and efficiency into balance testing

ICS® – the leader in vestibular testing

ICS is a leading global provider of diagnostic devices for balance disorders. Founded in 1981, the company has a history of developing ground-breaking products that provide pinpoint accuracy for balance testing. ICS is an expert brand of GN Otometrics.



BALANCE



WITH PEOPLE IN MIND

Software and hardware improvements make the assessment experience more comprehensible and comfortable for you and your patients.



UNDERSTANDING YOUR NEEDS

Building on user experiences and relationships with key opinion leaders we have made gold standard vestibular assessment accessible no matter where you test.



MEANINGFUL INNOVATION

We have refined our way of developing vestibular assessment systems to match the exact needs of clinics, enabling greater precision and faster diagnosis.



OUR COMMITMENT, YOUR FUTURE

Based on our history and balance testing breakthroughs we develop systems that maintain relevant traditional tests while providing groundbreaking functionality that is changing vestibular testing today, and tomorrow.

Sponsor of Balance Awareness Week



BALANCE AWARENESS WEEK
to DEFEAT DIZZINESS

GN Otometrics, Europe. +45 45 75 55 55. info@gnotometrics.dk
GN Otometrics, North America. 1-800-289-2150. sales@gnotometrics.com
www.otometrics.com www.icsimpulse.com

 **otometrics**