

physio  
sensing

new

# Otoneuro System

**Therapy platform  
for vestibular  
rehabilitation**

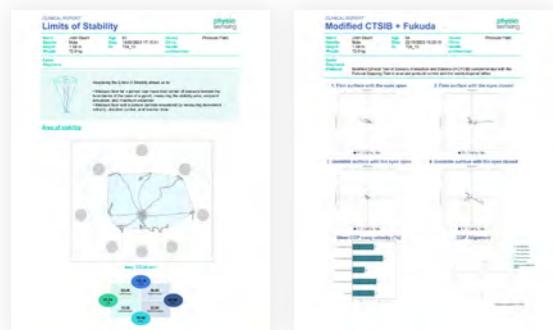
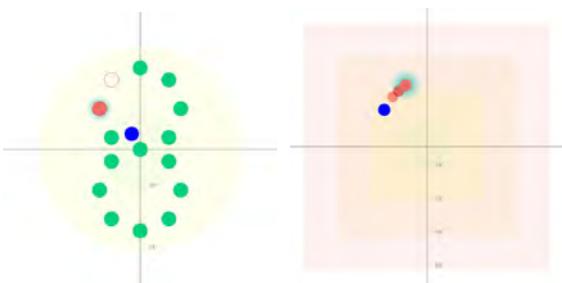
**UNIFYING BALANCE.  
TOTAL VESTIBULAR CARE.**

*Thinking about  
everyone in the world  
who suffers from  
balance disorders*

powered by  
**sensingfuture**

# Otoneuro System

**Otoneuro System** combines force plate posturography, an inertial sensor, and immersive VR into one software driven workflow. Clinicians assess VOR, visual-vestibular integration, cervical proprioception, and postural control, then deliver targeted, engaging therapy with automated reports to track progress.



**Designed  
for strong  
clinical  
decisions**

## CLINICAL APPLICATIONS

### Functional VOR Assessment & Training

Measure VOR with Dynamic Visual Acuity and Gaze Stabilization tests, identify asymmetries, and perform adaptation exercises to improve gaze stability and reduce oscillopsia.

### Visual-Vestibular Integration & Motion Sensitivity

Use optokinetic stimuli within posturography to reveal sensory conflict and visual dependence, then habituate safely in VR scenarios tailored to motion-provoked symptoms.

### Cervicogenic Dizziness & Proprioceptive Control

Quantify cervical joint position error with an inertial sensor to profile neck proprioception deficits and tailor head-neck repositioning tasks with real-time feedback.

### Postural Control & Sensory Reweighting

Objectively assess static/dynamic balance, establish baseline measures and improve clinical decision making. Choose between different exercises to train balance, targeting postural alignment, weight transfer ability, directional control, limits of stability and sensory integration under progressively complex VR environments.

**Product Name:**  
PhysioSensing Otoneuro System

**Who** is this solution for:

- Otoneurologists & Neurologists
- ENT/Otolaryngology clinics
- Audiologists
- Vestibular physiotherapists & rehab specialists
- Rehabilitation medicine & neurology services
- Private clinics and balance centers
- Universities & research groups

**Field of application:**

- Vestibular assessment and rehabilitation (clinical & research)
- Balance and fall-risk profiling in neurological/otologic conditions

**Main applications**

- Quantifying dizziness / imbalance with force-plate
- Posturography with optokinetic stimulation
- Functional VOR testing and training (DVA/GST)
- Detect sensory dependences
- Cervical proprioception (JPE) assessment and retraining
- Sensory reweighting and balance training delivered with or without VR environments.

# Otoneuro System Assessment

## Visual-Vestibular Integration

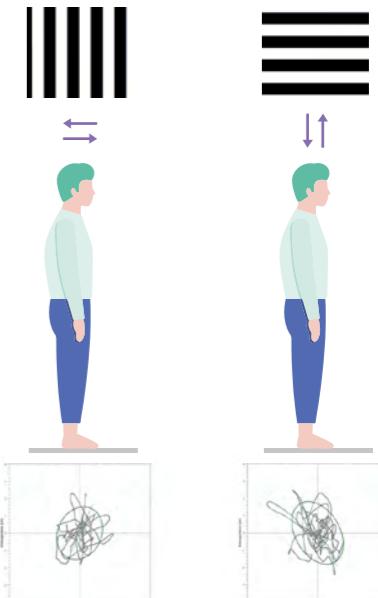
» Optokinetic Test

 with or without VR



### HOW

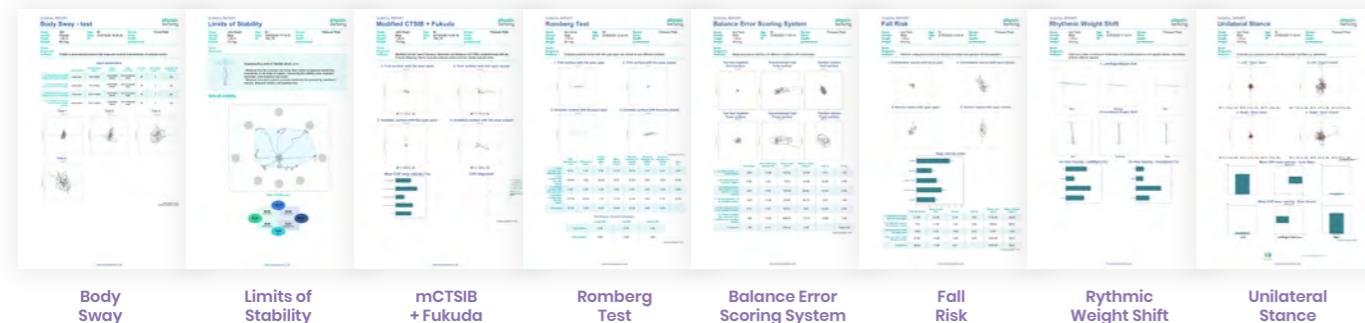
Posturography with visual conflict stimulus using optokinetic bar patterns in different directions.



### WHY

Evaluate visual dominance in postural control.

## Balance Assessment Protocols



### HOW

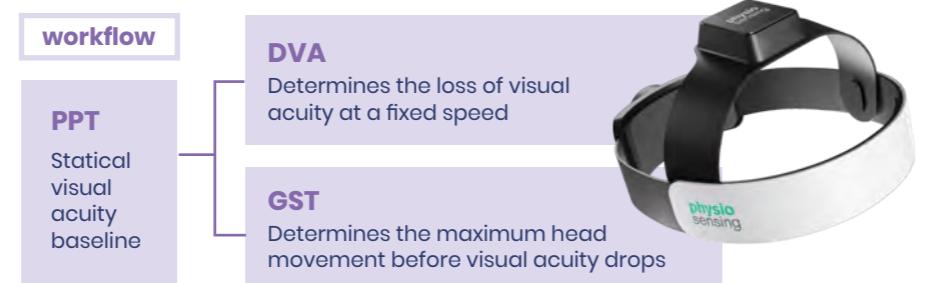
Using a force plate.

### WHY

Assess and measure balance in multiple sensory conditions and motor tasks.

## Vestibular Ocular Reflex (VOR)

- » **PTT** – Perception Time Test
- » **DVA** – Dynamic Visual Acuity
- » **GST** – Gaze Stabilization Test



### HOW

Using an Inertial Sensor.

### WHY

Allows you to understand the loss of visual acuity when there is head movement.



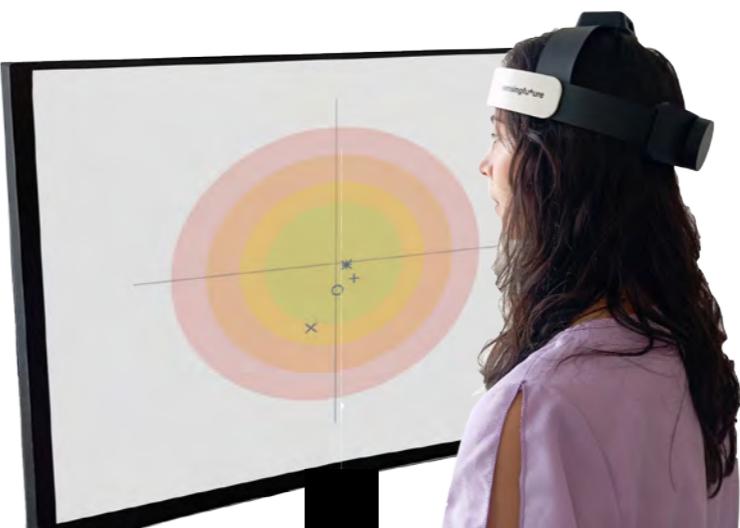
## Cervical Proprioception

- » **JPE** – Cervical Joint Position Error Test



### HOW

Seated with trunk stabilized, with inertial sensor. With eyes closed, the patient returns to neutral position after head movement.



### WHY

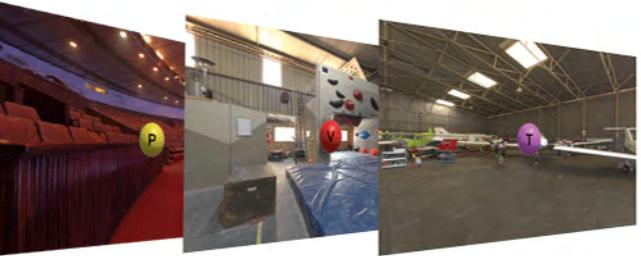
Identify associations between instability and dizziness symptoms.

# Otoneuro System Treatment

## VOR and Oculomotor

VR with or without VR

- › Saccades
- › Smooth Pursuit
- › Vergence
- › Fixation
- › VOR and Oculomotor Exercises

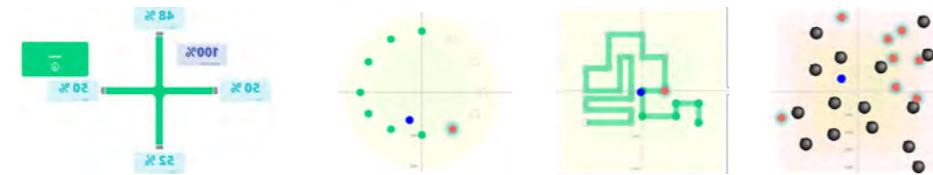


This module focuses on improving the Vestibulo-Ocular Reflex (VOR) and oculomotor control, essential for gaze stability, visual tracking, and spatial orientation.

## Balance

Force Plate using Force Plate

- › Balance and Stability
- › Figure and Paths
- › Random Points
- › Protocol Training
- › Load Charts

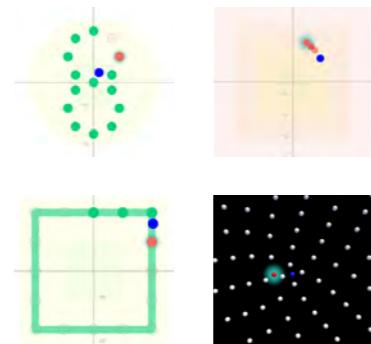


Five groups of exercises to train balance, targeting postural alignment, weight transfer ability, directional control, and the limits of stability. Each group includes exercises with varying levels of difficulty and can be adapted to different therapeutic goals.

## Cervical Proprioception

Inertial Sensor using Inertial Sensor

- › Figure and Paths
- › Random Points
- › Visual Stimulus



This module enhances head-body coordination through targeted neck movement and feedback exercises, improving sensorimotor control, reducing dizziness, and restoring postural stability.

## Habituation Exercises

VR with or without VR

Exercises in this category are designed to reduce vestibular-related symptoms by repeatedly exposing the patient to movements or visual environments that provoke dizziness. Exercise can be performed in virtual environments with varying levels of complexity, visual contrast, and motion speed, depending on the therapeutic goals and the patient's level of tolerance.



- › Visual Stimulus
- › Optokinetic Stimulation (Bars and Tunnel)
- › VOR Suppression (VR only)
- › HD Videos 360° (VR only) (real world busy environments)

## Vestibular Rehabilitation VR Game

COMING SOON

- › Head Flight

VR using VR

This module uses virtual reality goggles for interactive head-controlled flight exercises. By guiding an aircraft through head movements, patients train gaze stability, vestibular adaptation, and motion tolerance in an engaging, dynamic environment.



## HD Busy Environments

COMING SOON

VR using VR



This module exposes patients to high-definition videos with complex visual scenes to promote vestibular habituation and visual desensitization, helping them better tolerate motion and busy environments in daily life.

## Balance Games

Force Plate using Force Plate



- › Pong & Ball Balance
- › BART
- › 2D Game
- › Slime Pong & Slime Run
- › Break Your Balance
- › Space Sway

## Motor-Cognitive Game

- › Memory Game



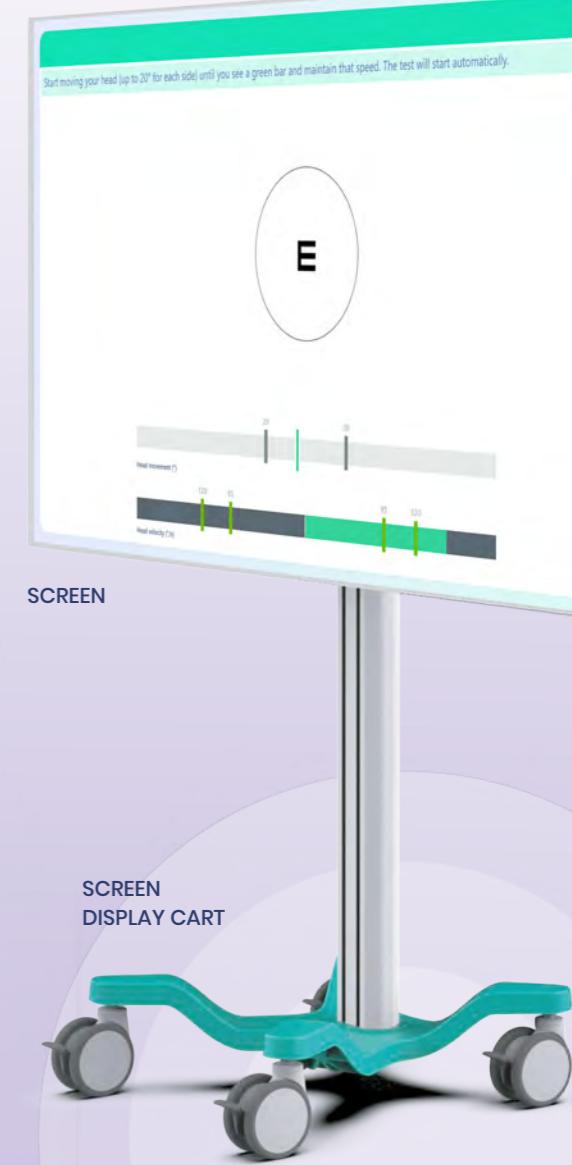
This module uses immersive serious games and force platform training to make balance rehabilitation engaging and functional. It integrates cognitive tasks and weight-shifting exercises to improve coordination, dual task performance, and real life movement control.

# Otoneuro System Setup

## MEDICAL STATION



## PATIENT STATION



## TECHNICAL SPECIFICATIONS

### FORCE PLATE

|                                |                |
|--------------------------------|----------------|
| Size (Length x Width x Height) | 55 x 55 x 3 cm |
| Weight                         | 8.5 kg         |
| Thickness                      | 1,5 cm         |
| Material                       | Aluminium AU4G |
| Minimum load                   | 20 kg          |
| Maximum load                   | 250 kg         |
| Sampling rate                  | 100 Hz         |
| Analogic / Digital Conversion  | 24 bits        |
| Platform Computer interface    | USB            |
| Power supply                   | USB cable      |

### INERTIAL SENSOR

|                                |   |
|--------------------------------|---|
| Size (Length x Width x Height) | (20.5 up to 25) x 18.4 x 13 cm                    |
| Strap head size                | 53 up to 63 cm                                    |
| Weight                         | 200 g + cable 90 g                                |
| Sensor type                    | 3-axis accelerometer, magnetometer, and gyroscope |
| Material                       | PLA and TPU                                       |
| Sampling rate                  | 100 Hz ~ 100 acquisitions/second                  |
| Sensor computer interface      | USB   |
| Power supply                   | USB cable   |
| Cable length                   | 5 m   |

### SCREEN

|              |                           |
|--------------|---------------------------|
| Screen size  | 165.1 cm (65")            |
| Resolution   | 4K Ultra HD (3840 x 2160) |
| Refresh Rate | 144 Hz                    |
| Connectivity | HDMI                      |

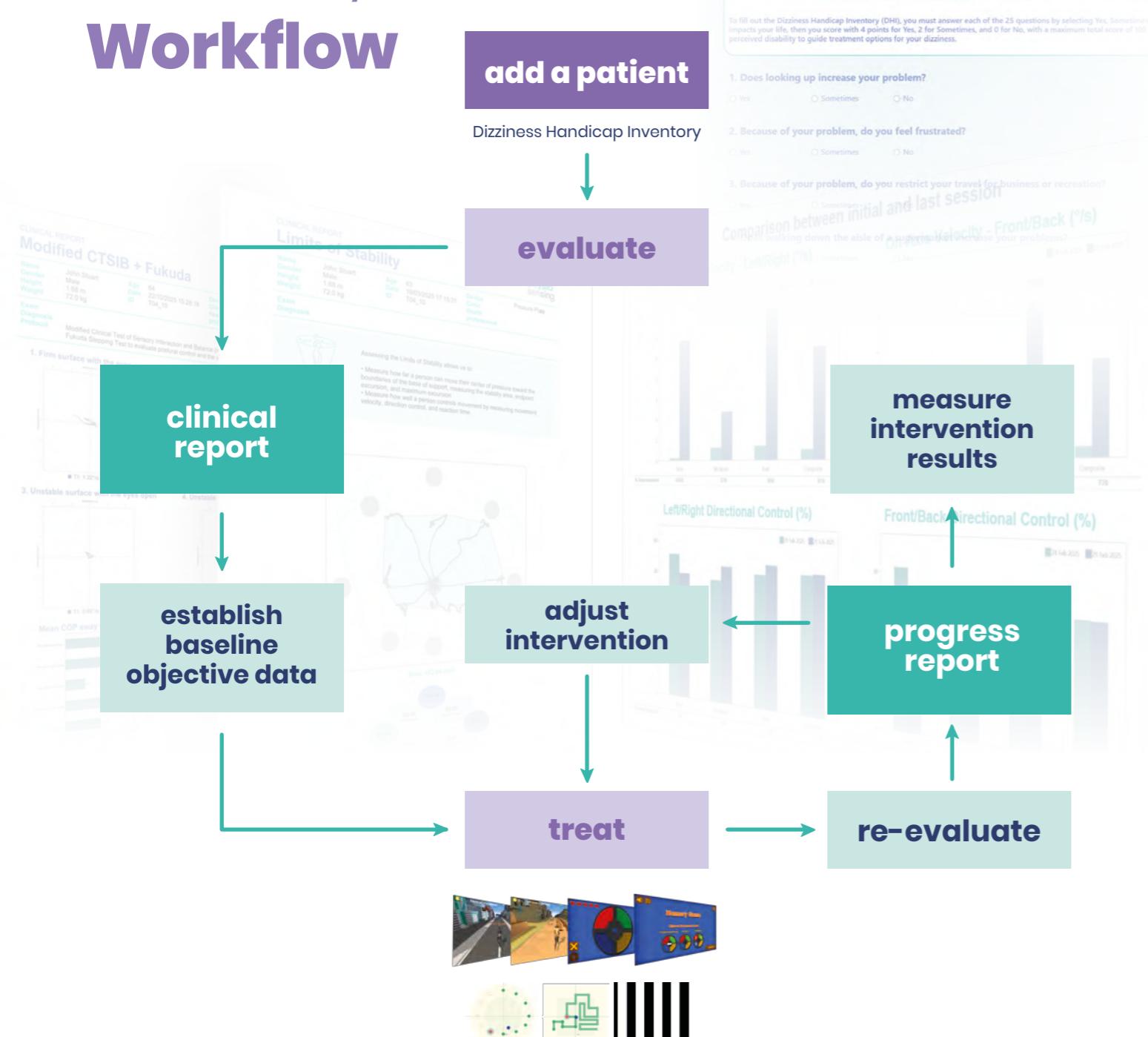
### VIRTUAL REALITY HEADSET (Meta Quest 3S)

|                                |   |
|--------------------------------|---|
| Size (Length x Width x Height) | (26 up to 33) x 21 x 13 cm              |
| Strap head size                | 48 up to 68 cm                          |
| Weight                         | 727 g + cable 223 g                     |
| Optics                         | Fresnel lenses                          |
| IPD range                      | 58-68 mm (hardware adjustable)          |
| Resolution                     | 1832 x 1920 (per eye)                   |
| Field of view                  | 96° horizontal and 90° vertical         |
| Refresh rate                   | 120 Hz                                  |
| Wi-Fi                          | Wi-Fi 6E                                |
| Headset battery life           | >2.5 hours (18W power adapter included) |
| Controller's battery           | AA batteries                            |
| Cable length                   | 5 m                                     |

### PC MINIMUM REQUIREMENTS

|  |   |
|--|---|
| It is mandatory to have the minimum requirements to guarantee proper functioning of the system |   |
| Processor (CPU)  | Intel i5, 2.5GHz (6 Performance-cores)<br>Avoid 'U' or 'G' versions of processors |
| RAM  | 16 GB   |
| Graphic Card   | 8 GB  |
| USB Ports  | Minimum 1 USB 3.0 port, 4 USB 2.0 or 3.0 port and 2 HDMI or DP                    |
| Operating System   | Windows 10 or 11 (64 bits)  |
| Recommended Screen Resolution  | 1920 x 1080 px (16:9 aspect ratio)  |

# Otoneuro System Workflow



## CONFIGURATIONS



## REGULATORY

CE Medical Device Class I  
According to Medical Device Regulation (MDR) EU 2017/745 of the European Parliament  
Standards applied: ISO 13 485  
UDI - DI number: 05600717927079  
Warranty: 2 years

# why choose OTONEURO SYSTEM?

## True all-in-one

Assess, treat, and report – unify force plate, Inertial Sensor, and VR in one platform, reducing complexity, costs, and training time.

## Functional VOR tests

DVA and GST – quantify gaze stability in seconds, and show patients measurable improvements they can feel in daily life.

## Optokinetic tools for visual motion intolerance

Reveal visual dependence, provoke symptoms safely in VR, then habituate progressively to restore confidence in busy, real-world environments.

## Cervical proprioception quantified via inertial sensor

Measure joint position error precisely, target head-neck control, and reduce cervicogenic dizziness that undermines balance and rehabilitation outcomes.

## Objective posturography with proven clinical utility

Capture sway metrics and document fall risk, and communicate progress clearly to patients.

## VR therapy

Essential modules for vestibular rehab. Deliver engaging, repeatable sessions that boost adherence.

## VOR

A category of exercises that target VOR. Help your patient keep their vision clear during everyday activities like walking, reading or turning their head, empowering them to move through life with confidence.

## Embedded DHI & Clinical History profiling

Correlate subjective symptoms with objective findings, triage faster and tailor rehabilitation pathway.

## Automated, comparative reports for outcomes and research

One-click summaries and objective metrics, and data export.

## One workflow

No juggling multiple systems

## Backed by PhysioSensing's relentless innovation

Rapidly evolving features, responsive support, and a roadmap shaped by clinicians who treat dizziness every day.