Estrategias Actuales en Rehabilitación vestibular

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Sistema Multisensorial Complejo

Entrada

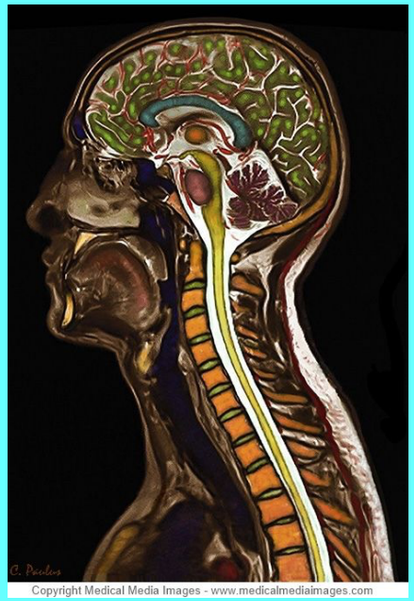
- Visión
- Oído:

Audición

Vestibular

- Somatocepción

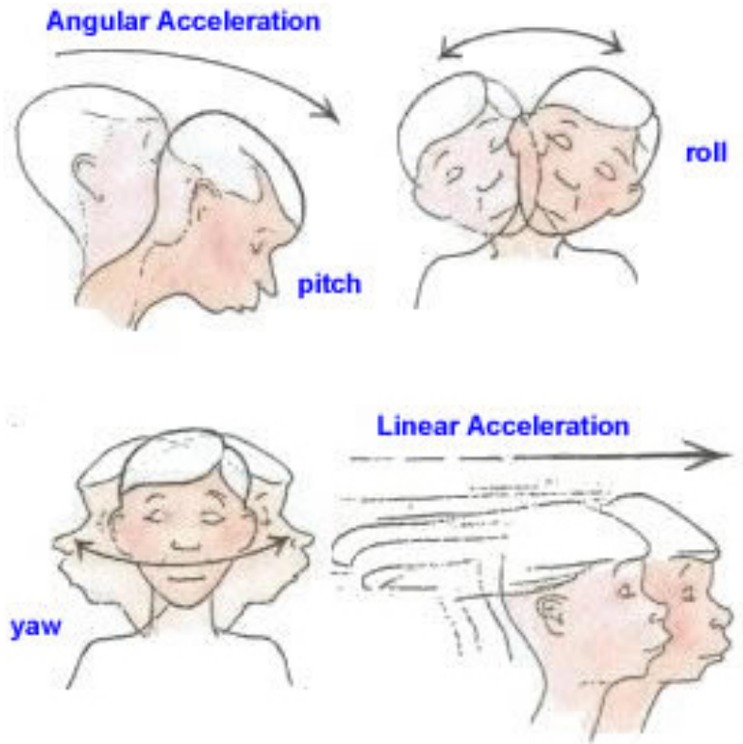
Procesamiento

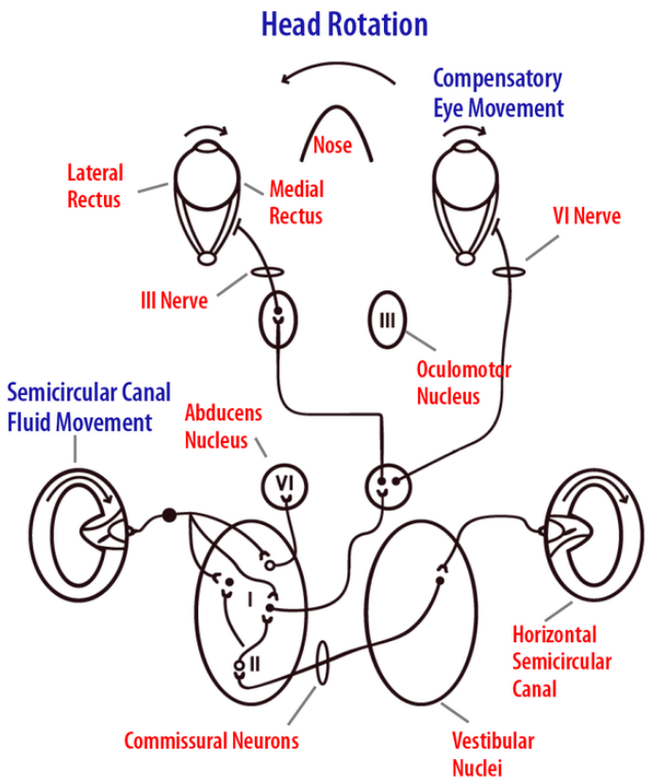


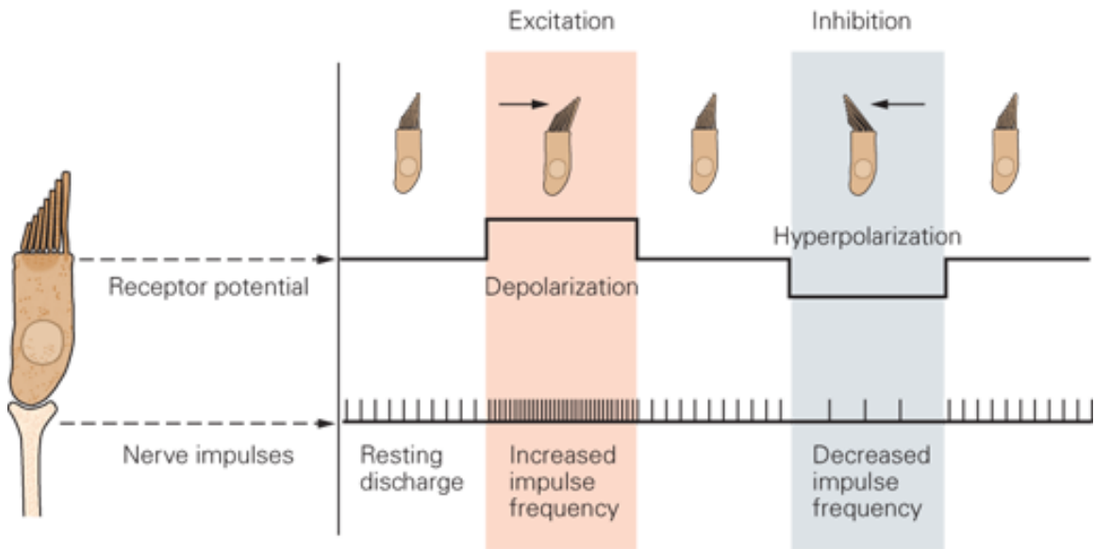
Salida

- Movimientos oculares
- Estrategias de movimiento corporal: mantener COP en BDS, cabeza y tronco alinea-dos contra gravedad, estabilizar el cuerpo durante el movimiento.

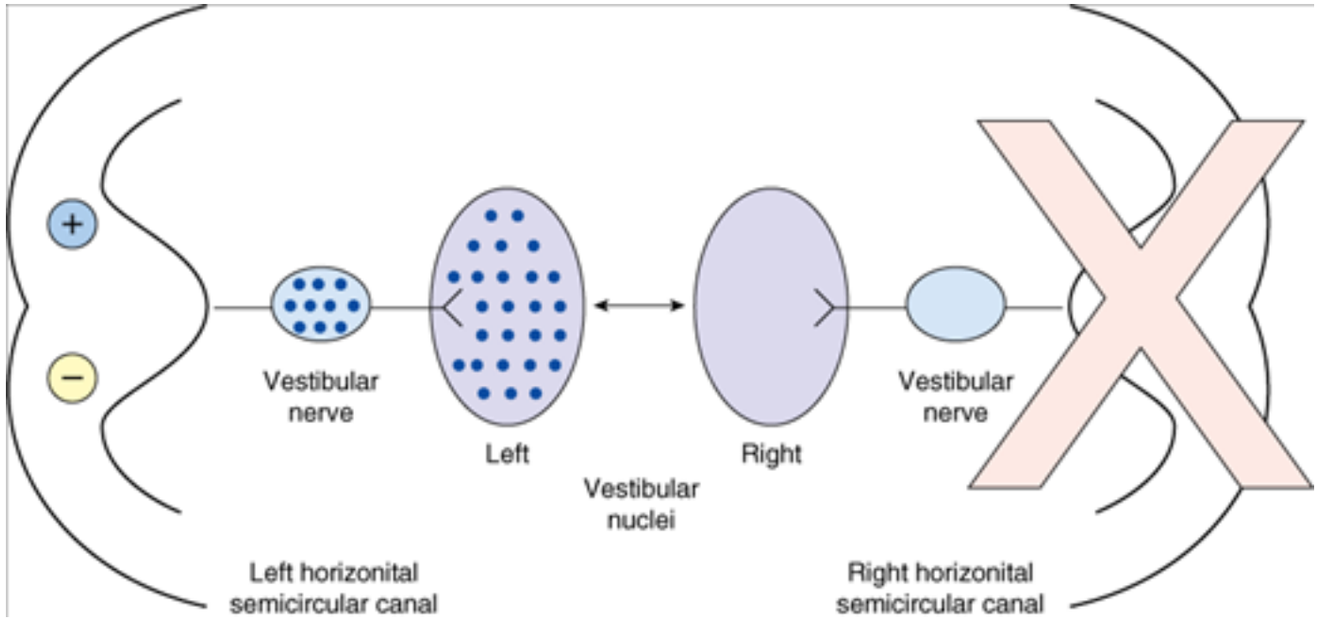
Fisiología vestíbulo-ocular

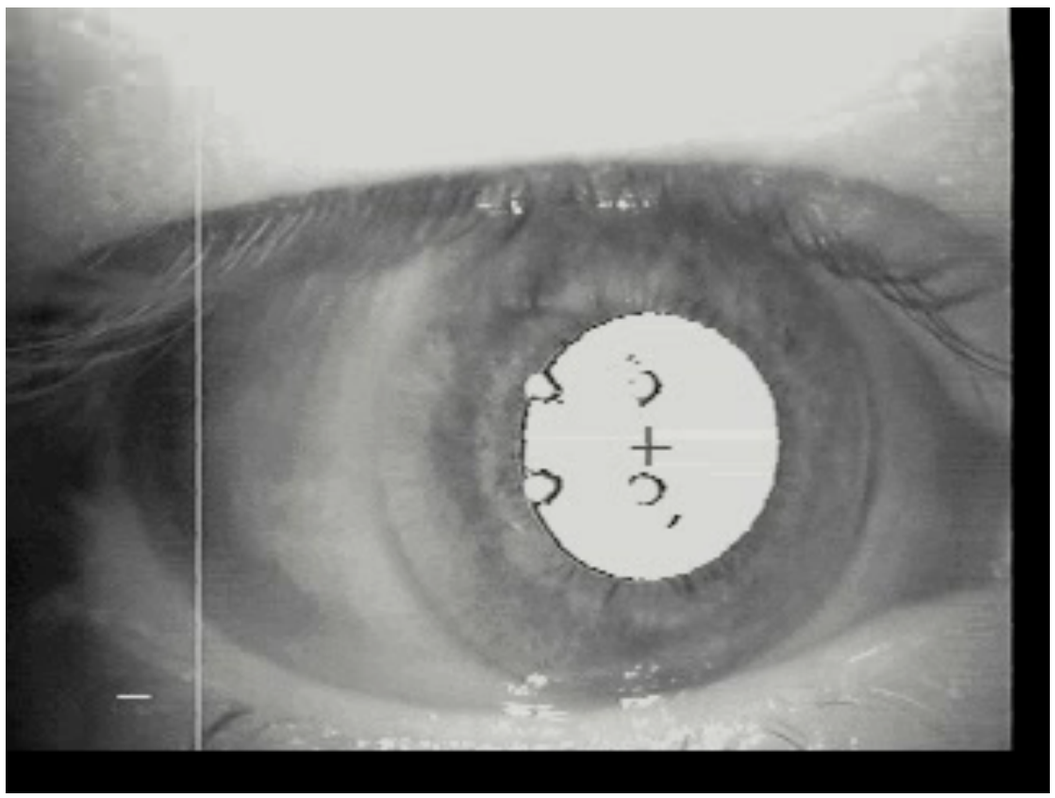






Disrupción del Balance: estático





Disrupción del Balance: dinámico

Compensación Vestibular

Proceso a nivel del SNC, que lleva a la recuperación funcional

- Fase aguda: rebalancear tono vestibular; recuperación de alteraciones estáticas.

- Fase subaguda y crónica; recuperación de alteraciones dinámicas

Propiedades estructurales y funcionales del SNC

- REDUNDANCIA
- CONVERGENCIA FUNCIONAL
- SINERGISMO FUNCIONAL
- ESTRATEGIA SENSORIO-MOTORA

Proceso de restauración

- ACTIVACION
- RESTITUCION
- SUSTITUCION

COMPENSACION VESTIBULAR

Mechanisms of vestibular compensation: recent advances

Mayank B. Dutia

Curr Opin Otolaryngol Head Neck Surg 18:420–424

1068-9508

J Neurol (2016) 263 (Suppl 1):S54–S64
DOI 10.1007/s00415-015-7903-4

REVIEW

Vestibular compensation: the neuro-otologist's best friend

Michel Lacour[1,4] · Christoph Helmchen[2] · Pierre-Paul Vidal[3]

Rehabilitación Vestibular

En los 40’ Cawthorne y Cooksey observaron:

- **los paciente que se movían, mejoraban más que los que permanecián en reposo**
- **era necesario provocar los síntomas para reducirlos**

En los 80’ se establecen ejercicios de estabilización de la mirada, con el objetivo de potenciar la función residual, estimular estrategias de sustitución y habituación

CLINICAL PRACTICE GUIDELINES

Vestibular Rehabilitation for Peripheral Vestibular Hypofunction: An Evidence-Based Clinical Practice Guideline

FROM THE AMERICAN PHYSICAL THERAPY ASSOCIATION
NEUROLOGY SECTION

Guía clínica con fuertes niveles de evidencia, así como de recomendaciones, 2016. Actualizaciones: www.neuropt.org

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fHIT 1.0 functional
Head Impulse Test

Software

Software patentado que:
- primero evalúa la agudeza visual estática utilizando una tabla optométrica, que se observa en el monitor con tamaños de letra escalados de acuerdo a la distancia de visualización del sujeto;
- cuando la aceleración angular de la cabeza impuesta excede un umbral específico, un optotype (un carácter utilizado por oftalmólogos para el examen de la visión) aparece brevemente en la pantalla por un número definido de cuadros de video y durante un tiempo de desfase definido;
- los caracteres reconocidos por los sujetos son registrados y se muestra una distribución basada en el porcentaje de reconocimientos correctos y datos normativos;
- la pantalla final que muestra los resultados puede imprimirse fácilmente o guardarse como formato pdf;

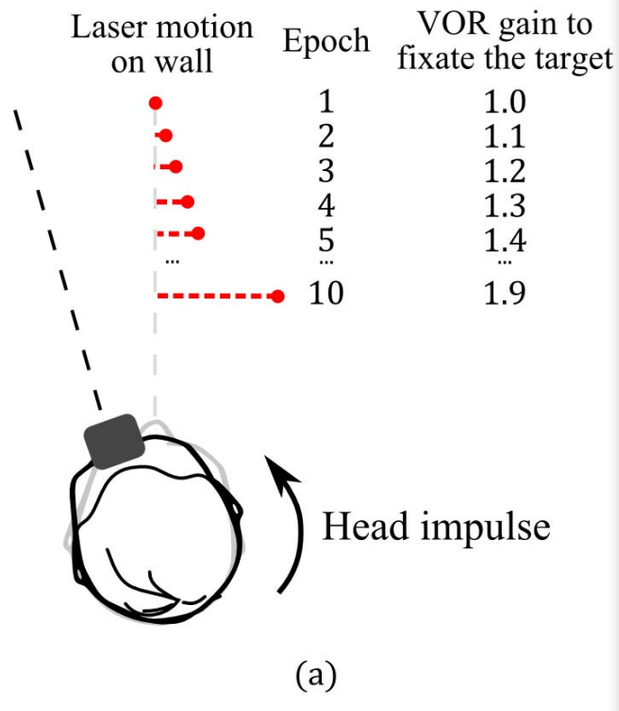
beon solutions

Estrategias Nuevas

EMB IEEE TRANSACTIONS ON NEURAL SYSTEMS AND REHABILITATION ENGINEERING, VOL. 26, NO. 6, JUNE 2018 1223

StableEyes—A Portable Vestibular Rehabilitation

Christopher J. Todd, Patrick P. Hübner, Philipp Hübner, Micha



(a) Motion of the laser target during a training session, where the left side is being adapted. The laser target appears stationary on the wall (gain of 1) for all rightward rotations. For leftward rotations, the VOR gain demand for epoch one is set to 1. The gain demand increases every epoch by 0.1. The dashed line shows the path of the laser target as seen by a stationary observer. For instance, during epoch 1 the laser appears to remain stationary. By epoch 10, the laser draws a long line on the wall in the opposite direction to the head – a gain of 1.9. (b) Head and eye velocity traces obtained from a single subject during a training session. Top row: epoch 1; bottom row: epoch 10 (after 15min of incremental adaptation training). During epoch 10, for rotations towards the adapting side, the VOR gain has increased by 20%. Gains are reported as mean gain ± standard deviation

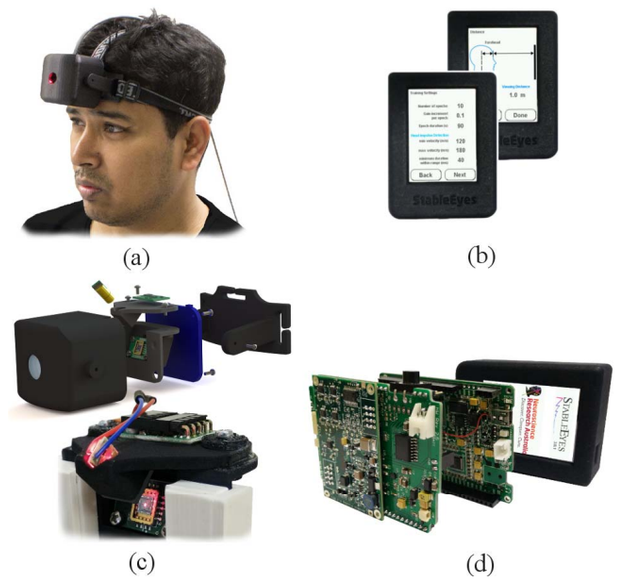


Fig. 1. (a) A subject wearing the head unit; (b) Base unit, showing configuration screens; (c) Exploded view of the head unit showing MARG sensor array, and laser-on-mirror assembly (held in a calibration mount); (d) Exploded view of the base unit. Omitted for clarity: battery, speaker, vibration motor, various connectors.

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Journal of Vestibular Research xx (20xx) x–xx
DOI:10.3233/VES-180633
IOS Press

A speed-based approach to vestibular rehabilitation for peripheral vestibular hypofunction: A retrospective chart review

Robert Alan Roller[a,*] and Courtney D. Hall[b,c]
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[b]*James H. Quillen VA Medical Center, Mountain Home, TN, USA*
[c]*Department of Physical Therapy, East Tennessee State University, Johnson City, TN, USA*

improve the effectiveness of the exercise [9]. Unlike duration, the speed performance parameter is not easily measured and instructions are general ("move the head as quickly as possible as long as the target remains in focus") with no specific speed goal (e.g., 240°/s). Thus, it is not clear that patients actually train at higher velocities, especially velocities that necessitate vestibular input for maintaining gaze stability during daily activities. It may be that the focus on

speed-based approach. Additionally, the combination of gaze stability exercises with background distraction, different postural challenges (standing or even walking) and target movements (often referred to as VORX2) may add unnecessary complexity and difficulty that detract from optimal performance of gaze stability exercises.

The primary purpose of this study was to examine the efficacy of a modified approach to vestibular rehabilitation, which focuses on the attainment of a specific speed of head movement for gaze stabilization exercises and modifies the gaze stability exercises by eliminating additional challenges (e.g., moving target, distracting backgrounds or stance

A secondary purpose was to evaluate the efficacy of targeted gait and balance exercises to restore vestibulo-spinal reflex (VSR) responses and realign a distorted internal model of verticality through neuromuscular re-education and motor learning principles applied to VR. The combination of these two approaches resulted in patients with peripheral vestibular hypofunction, returning to normal functioning for gait, balance and gaze stabilization.

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NEUROLOGY

REVIEW ARTICLE
published: 06 January 2015
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Interaction between vestibular compensation mechanisms and vestibular rehabilitation therapy: 10 recommendations for optimal functional recovery

Michel Lacour[1] and Laurence Bernard-Demanze[1,2]*

- **Estimular al paciente a realizar conductas activas que involucren moverse**
- **Comenzar el tratamiento lo más pronto posible luego de ocurrida la lesión**
- **La RV guía y estimula procesos de compensación postlesional**
- **Realizar ejercicios que promuevan adaptación y no habituación**
- **Individualizar la estrategia de tratamiento (no estandarizar)**
- **Tener en cuenta el perfil motor, sensorial y cognitivo del individuo**
- **Considerar la progresión del tratamiento en cuanto a la dificultad del mismo**
- **Reducir stress y ansiedad, considerar depresión**
- **Favorecer contextos habituales del paciente (ecológicos)**
- **Motivar al paciente**