

Vestibular Therapy and Rehabilitation

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Preface

This book is an interdisciplinary approach to address a complex field where neurologists, otolaryngologists, geriatricians, physiotherapists, and other medical disciplines are involved. Complaints of dizziness, vertigo, and vestibular disorders have been increased in numbers over the last decades.

The needs of the aging population of the Western world and the technical ability to specifically diagnose vestibular deficits (e.g., by video head impulse, vestibular evoked myogenic potential recordings) have become the main drivers to develop individualized treatment and rehabilitation concepts. They are aimed at targeting the identified underlying disorder responsible for vertigo or dizziness in the individual patient.

Therefore, the whole range of “specific” (e.g., Menière’s disease, vestibular migraine), but also “less specific” disease entities (e.g., presbyvestibulopathy, motion sickness) are covered. The general focus of the book is therefore (see the title) “Therapy and Rehabilitation,” but not primarily diagnostics.

Vestibular physiotherapy is a well-developed field in the Anglo-American, but also Scandinavian countries, but less represented in the rest of Europe. Thus, we have described some of the vestibular exercises in detail so that the non-specialized therapist might benefit.

Vestibular rehabilitation with technical systems has begun with the introduction of the Balance Master series and related balance platforms about four decades before. This technological field has strongly contributed to new therapies over the last 10 years and is covered in a separate chapter.

We wish this book as a mixture between hands-on style manual and academic tutorial interested readers and therapeutic success for all working in this field!

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Klaus Jahn received his Neurology training in Munich at the Technical University (TU; Head: Bastian Conrad) and the Ludwig-Maximilians-University (LMU; Head: Thomas Brandt) in Munich. Between 2006 and 2014 he served as a senior consultant in the same department (Head: Marianne Dieterich). From 2012 to 2014 he was the Director of the German Center for Vertigo and Balance Disorders (DSGZ) at the LMU. He is the Head of the Departments of Neurology and Geriatrics at the Schön Klinik Bad Aibling, Germany since 2015. His clinical and research focus is on balance, gait, vertigo and dizziness, multisensory function, neurology over the life span, and neurorehabilitation. He has published about 240 papers in peer-reviewed journals and is member of several guideline groups in the field.

Abbreviations

ABC	Activities-specific-balance confidence scale
ABR	Auditory brainstem responses (auditory evoked potentials)
AICA	Anterior inferior cerebellar artery
AN	Acoustic neuroma (synonym: vestibular schwannoma)
AVS	Acute vestibular syndrome
BBS	Berg balance scale
BPPV	Benign paroxysmal positional vertigo
BVL	Bilateral vestibular loss
CA	Cerebellar ataxia
CI	Cochlear implant
CNS	Central nervous system
CPA	Cerebello-pontine angle
CROM	Cervical range-of-motion
CSF	Cerebrospinal fluid
CT	Computed tomography
DGI	Dynamic gait index
DHI	Dizziness handicap inventory
DVA	Dynamic visual acuity
EVA	Enlarged vestibular aqueduct
FES	Fall efficacy scale
GCS	Glasgow coma scale
HA	Hearing aid
HINTS	Head impulse/nystagmus/test of skew
HIT	Head impulse test
HL	Hearing loss
IAC	Internal auditory canal
iNFT	Individualized neuro-feedback training
INO	Internuclear ophthalmoplegia
MARS	Mobile app rating scale
MD	Menière's disease
MEMS	Micro-electro-mechanical systems
MRA	Magnetic resonance angiography
MRI	Magnetic resonance tomography
MS	Multiple sclerosis

MSA	Multi-system atrophy
MTBI	Mild traumatic brain injury
nGVS	Noisy galvanic vestibular stimulation
NFT	Neuro feedback training (vibrotactile)
NSAID	Non-steroidal anti-inflammatory drugs
OAE	Otoacoustic emissions
PCDS	Posterior canal dehiscence syndrome
PCS	Post-concussion syndrome
PD	Parkinson's disease
PICA	Posterior inferior cerebellar artery
PMR	Progressive muscular relaxation
PS	Parkinson syndrome
PSP	Progressive supranuclear palsy
PT	Physiotherapy/physical therapy
PTSD	Posttraumatic stress disorder
RCT	Randomized controlled trial
SCC	Semicircular canal
SCDS	Superior canal dehiscence syndrome
SNHL	Sensorineural hearing loss
SRC	Sports-related concussion
SVV	Subjective visual vertical
TENS	Transcutaneous electric nerve stimulation
TEOAE	Transient evoked otoacoustic emissions
TUG	Timed up and go test (Tinetti's test)
UVL	Unilateral vestibular loss (= vestibular neuritis/neuropathy)
c/oVEMP	Cervical/ocular vestibular evoked myogenic potentials
VM	Vestibular migraine
VN	Vestibular neuritis (= UVL)
VOR	Vestibulo-ocular reflex
VP	Vestibular paroxysmia
VRT	Vestibular rehabilitation therapy
VS	Vestibular stroke
VSS	Vertigo symptom scale
WAD	Whiplash-associated disorder