

## CURRICULUM VITAE

TIMOTHY C. HAIN, M.D.

Professor of Physical Therapy/Human Movement Science and Otolaryngology,  
Northwestern University Medical School

Board certified in Neurology

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### EDUCATION

1974 B.S., Biochemistry, University of Illinois  
Urbana, Illinois

6/2/1978 Doctor of Medicine (M.D.)  
Abraham Lincoln School of Medicine  
University of Illinois  
Chicago, Illinois

7/1/1978 - 6/30/1979 Intern (Medicine)  
University of Illinois Hospital  
Chicago, Illinois

7/1/1979 - 6/30/1982 Resident (Neurology)  
University of Illinois Hospital  
Chicago, Illinois

1982-1984 Fellow, Neurology, Ophthalmology  
Johns Hopkins Hospital  
Baltimore, Maryland

### BOARD CERTIFICATION:

Diplomate American Board of Psychiatry and Neurology, November, 1983. Certificate 25427

### POSITIONS:

1984-1985	Instructor in Neurology Johns Hopkins University Baltimore, Maryland
1985-1990	Assistant Professor of Neurology and Otolaryngology Johns Hopkins University, School of Medicine Baltimore, Maryland
1990-	Associate Professor of Neurology and Otolaryngology Clinical Track Northwestern University, School of Medicine Chicago, Illinois
2000 - 2002- 9/2002	Associate Professor of Physical Therapy/Human Movement Science Appointed to Graduate School Faculty Professor of Physical Therapy, Neurology, and Otolaryngology

HONORS:

- National Merit Scholar
- Granville Bennett Award for Contributions to Medical Education, University of Illinois, 1975
- Clinical-Investigator Award, National Institutes of Neurological and Communicative Diseases and Stroke, 1985
- Baxter Faculty Scholar, 1990-1993
- Fellow of the Buehler Center on Aging, 1995-
- Teacher of the Year Award (Neurology Residency), 1995-1996
- "Best Doctors in America", 2002, 2003, 2006-2011
- "America's Top Doctors", 2007
- Guide to America's top physicians, 2008

RESEARCH INTERESTS:

- Causes and treatment of dizziness, imbalance and hearing loss
- Head motor control, systems analysis
- Laryngeal motor control, systems analysis

RESEARCH SUPPORT (past and present):

- Fight for Sight, Post-doctoral Fellow, 1985-1986 (\$12,000)
- N.I.H., "Clinical Investigation of the Vestibulo-Ocular Reflex", 1984-1991 (R01-EY05505), Principal Investigator. \$266,000 total direct cost.
- N.I.H., "Clinical Investigation of the Vestibulo-Ocular Reflex", 1985-1990 (K08-NS00914), Principal Investigator. \$195,000 total direct cost.
- American Hearing Research Foundation, "Pre-Operative and Intra-Operative diagnosis of Perilymphatic Fistula. Principal Investigator. 1/1/91-12/31/92. \$23,000
- Baltimore Therapeutic Equipment Co. "Inadequate Postural Protective Responses. 10/28/91 -10/31/93. Co-investigators: M. Rogers, T. Hain. \$17,000

- N.I.H. "Control of Head Movement." 1993-1998, Investigator. Program project grant (Barry Peterson, PI). \$1,000,000/year for all investigations combined, supported 12.5% of salary.
- N.I.H. "Tai Chi for Balance Disorders." 1993-1994, Principal investigator. \$29,711, Reference # R21RR09535
- Northwestern Memorial Foundation. "Use of Tullio and Valsalva Tests to increase the Sensitivity and Specificity of the fistula test", 1994-1996, \$11,925
- N.I.H. Control Mechanisms in Sensory and Communication Disorders. (P60-DC02764). National Multipurpose Research and Training Center." 12/01/1995-11/30/2000, Investigator. (David Hanson, M.D., PI). \$1,093,802/ first year for all investigations combined, supported 15% of salary
- N.I.H. Neuroscience training grant. (David Hanson, M.D., PI). No salary support but I hosted post-doc fellows in my lab.
- American Hearing Research Foundation. Ototoxicity in patients on renal dialysis. Principal Investigator. 1996-1999. \$15,000
- NIH/NIDCD Angular and Linear Vestibulocollic Reflexes in Humans, 1 RO1 NS22490 (PI: Peterson, B.W.) 5/1/96-4/31/00. 12% Effort
- NIH/NINDS Systems Analysis of Primate Head Stabilization, 2 R01 DC01125 (PI: Keshner, E.A.), 4/1/97-3/31/01 10% effort
- NIH/NIDCD Regulatory Mechanisms Underlying Postural Stability. (PI: T. Hain, M.D). 1997-2001-, 10% effort
- NIH/NINDS RO1 NS38286-01 (PI: T. Hain) Head control mechanisms during voluntary trunk movements. 3/1999-2004 , 20% EFFORT
- NIH/NIDCD subcontract from R15 AG17567-01A1. Bppv in older patients. 2000-2002. 5% effort.
- NIH/NIDCD subcontract from R01 (Keshner, PI). Regulatory Mechanisms Underlying Postural Stability. (PI: T. Hain, M.D). 2002-, 20% effort
- NIH/NIDCD co-investigator on R01DC006243-01A1 (Larson, C). Feedback control of voice. 3/2004, 20% effort
- NIH/NCRR PI for 1S10RR21168-01, "Optotrack Motion Analysis System" 6/2005, 0% effort, \$120,000 instrumentation grant.

#### SOCIETIES:

- American Academy of Neurology (Fellow, 1982-)
  - Section on Neuro-ophthalmology and Neuro-Otology (NONO),
    - Councilor (May 2-2004 to 2010)
- American Neurological Association, <http://www.aneuroa.org/>, (Active member, 1993-),
- Barany Society, 1985-
- Chicago Laryngological and Otolaryngological, 1991-
- Institute of Electrical and Electronics Engineers, 1991-
- Northwestern University Institute for Neuroscience 1991-
- Society for Neuroscience, 1986-
- American Medical Association, Illinois State Medical Society, Chicago Medical Society.

## MEDICAL LICENSE:

9/14/1982	- Inactive	Maryland	D28493 (currently inactive status)
1990	- Present	Illinois	036-059122 (active)
UPIN #	:	D-72229	
Tax ID	:	364-47-6044	EIN

## HOSPITAL STAFF:

1984-1990	Johns Hopkins Hospital, Baltimore MD (inactive)
1990-	Northwestern Memorial Hospital, Chicago IL (Active staff)
1991-	Rehabilitation Institute of Chicago, Chicago IL (Consultant)

## EDITORIAL BOARDS:

I am often an reviewer for the Annals of Neurology, Ear and Hearing, Experimental Brain Research, Neurology, and Otolaryngology-Neurotology.

I am an associate editor for Audiology/Neurotology.

## OTHER BOARDS (Public Service):

Vestibular Diseases Association –  
 Medical Advisory Board, 1992-present  
 Mal de Debarquement Foundation  
 Medical Advisor 2003-present

## NATIONAL COMMITTEE SERVICE

NIH (National Institutes of Health), NIDCD Communication Disorders Review Committee (June 1998-2002)  
 NIH Special Emphasis Panels and ad-hoc study section member (ongoing, about 4/year).

## HOSPITAL COMMITTEE SERVICE

NMH Research Committee	1992-1996
NLM project committee	1995-1996

## MEDICAL SCHOOL SERVICE

Honor program in Medical Education Committee, 1991-1994  
 Teaching committee co-chair for Neurological Disorders (Second year medical students), 1996-2001  
 Director of Medical Student Education, Neurology, 1996-2001  
 Neurology Clerkship Director, 1996-1997 and 1999-2001

## UNIVERSITY COMMITTEE SERVICE

Information task force 1994  
 Medical Biomechanics Advisory Committee (Zev Rymer, Chair), 1990-1999  
 Search committee, for Chairman of programs in Physical Therapy, 1997-1999

## DEPARTMENTAL COMMITTEE SERVICE

Promotions committee (Neuro)	1993-1997
Resident education (Neuro)	1995-1996
Infrastructure committee (Neuro)	1995-1996
Executive committee (Neuro)	1996-1999

Residency Interviews (Otol) 1998, 1999  
 Search committee, for new faculty member, Dept. Physical Therapy,  
 2000-2001; 2004-2005  
 Director of Graduate Education (PT) 2003-2006

## OTHER

Co-director of *Neurobiology of Disease* course, a graduate level course, for NUIN 845-D33 (Northwestern University Institute for Neuroscience), 1998-2002  
 Mentor for post-doctoral fellows (1/year), audiology capstone project (senior thesis) students (1/year), BME students (0-1/year), Physical Therapy synthesis project (senior thesis) students (5/year), Audiology externs (1/year).  
 Reviewer for Medical Care Ombudsman Program (MCOP) 1/03-2010

## PUBLICATIONS (a total of more than 90):

--- Journal Articles (peer reviewed) ---

1. Chang C, Hain T, Hutton J. and Wetmur J: Effects of microscopic and macroscopic viscosity on the rate of renaturation of DNA. Biopolymers, 13:1847-1858, 1974.
2. Wong R, Reno J, Hain T, Platt R, Gaynon P and Joseph D: Profile of a dictionary compiled from scanning over one million words of surgical pathology narrative text. Computers and Biomedical Research, 13:382-398, 1980.
3. Robinson DA, Zee DS, Hain T, Holmes AM and Rosenberg LF: Alexander's law -- its behavior and origin in the human vestibulo-ocular reflex. Ann. Neurology, 16:714-722, 1984.
4. Kapoula ZA, Robinson DA and Hain TC: Motion of the eye immediately after a saccade. Experimental Brain Research, 61:386-394, 1986.
5. Hain TC, Zee DS and Mordes M: Blink-induced saccadic oscillations. Annals Neurology, 19:299-301, 1986.
6. Hain TC: A model of the nystagmus induced by off-vertical axis rotation. Biological Cybernetics, 54:337-350, 1986.
7. Fetter M, Hain TC, and Zee DS: Influence of eye and head position on the vestibulo-ocular reflex. Experimental Brain Research, 64:208-216, 1986.
8. Lasker AG, Zee DS, Hain TC, and Folstein S: Saccadic eye movements in Huntington's Disease: Initiation defects and distractibility. Neurology, 37: 364-370, 1987.
9. Zee DS, Hain TC and Carl JR: Abduction nystagmus in internuclear ophthalmoplegia. Annals Neurology, 21:383-388, 1987.
10. Hain TC, Fetter M and Zee DS: Head-shaking nystagmus in unilateral peripheral vestibular lesions. American J. Otolaryngology, 8:36-47, 1987.
11. Kapoula Z, Hain TC, Zee DS and Robinson DA: Adaptive changes in post-saccadic drift induced by patching one eye. Vision Research, 27:1299-1307, 1987.
12. Hain TC, Zee DS, Maria B: Tilt-suppression of the vestibulo-ocular reflex in patients with cerebellar lesions. Acta Otolaryngology. (Stockh), 105:13-20, 1988.
13. Lasker AG, Zee DS, Hain TC, Folstein SF and Singer H: Saccades in Huntingtons disease: Slowing and dysmetria. Neurology, 38:427-431, 1988.
14. Levin S, Luebke A, Hain TC, Zee DS, Robinson DA and Holzman PS: Smooth pursuit eye movements in schizophrenics: quantitative measurements with the search-coil technique. J. Psych. Research, 22:195-206, 1988.

15. Furman J., Hain TC and Paige G: Central adaptation model of the vestibulo-ocular and optokinetic systems. Biological Cybernetics, 61:255-264, 1989
16. Tijssen M., Straathof C., Hain TC, and Zee D.S.: Optokinetic afternystagmus in humans: normal values of amplitude, time constant and asymmetry. Annals Otolaryngology, Rhinology, Laryngology, 98:741-746, 1989.
17. Wei D., Hain TC and Proctor L.: Head-shaking nystagmus: associations with canal paresis and hearing loss. Acta Otolaryngologica. 108: 362-367, 1989
18. Tusa RJ, Kaplan PW, Hain TC, Naidu S. Ipsiversive eye deviation and epileptic nystagmus, Neurology, 1990.
19. Hain, TC and Luebke, A.: Phoria adaptation in patients with cerebellar lesions, Investigative Ophthalmology, 1990.
20. Fletcher WA, Hain TC and Zee DS: Optokinetic nystagmus and afternystagmus in human beings: relationship to nonlinear processing of information about retinal slip. Experimental Brain Research, 1990.
21. Hain, TC and Buettner, U.E.: Static roll and the vestibulo-ocular reflex (VOR), Experimental Brain Research, 82, 463-471, 1990
22. Ashe J, Hain TC and Zee DS: Microsaccadic oscillation --a new clinical syndrome, Brain, 114, 461-472, 1991
23. Hain TC, Zee DS. Abolition of optokinetic afternystagmus by aminoglycoside ototoxicity, Annals Otolaryngology, 100, 580-583, 1991.
24. Hain TC, Patel G: Slow-cumulative Eye Position to Quantify Optokinetic Afternystagmus, Annals Otolaryngology, 101, 1992, 255-260
25. Zee DS, Hain TC. Clinical Implications of Otolith-Ocular Reflexes. American Journal of Otolaryngology, 13, 1992, 152-157
26. Hanson DG, Logemann JA, Hain T. Differential diagnosis of spasmodic dysphonia: a kinetic perspective. J. Voice 6, 3-, 1992
27. Tusa RT, Zee DS, Hain TC. Voluntary control of congenital nystagmus, Clinical Vision Sciences 7, 1992, 195-210
28. Herdman SJ, Sandusky AL, Hain TC, Zee DS, Tusa RJ. Characteristics of postural stability in patients with gentamicin toxicity. J. Vestibular Research, 4, 1994, 71-80
29. Hain TC, Herdman SJ, Holliday MS, Mattox D, Zee DS, Byskosh AT. The localizing value of optokinetic afternystagmus. Annals ORL, 1994, 806-811
30. Harvey SA, Hain TC, Adamiec LC. Modified liberatory maneuver: Effective treatment for benign paroxysmal positional vertigo. Laryngoscope 104: 1994, 1206-1212
31. Hain TC. Treatment of Vertigo. The Neurologist. 1: 125-133, 1995
32. Young NM, Johnson JC, Mets B, Hain TC. Cochlear implants in young children with Usher's syndrome. Annals ORL, supplement 166, 104, 9, part-II, 1995, 342-345
33. Rascol O, Hain TC, Benazet M, Clanet M, Montastruc JL. Antivertigo Medications and Drug-Induced Vertigo Drugs 50 (5) 777-791, 1995.
34. Young NM, Mets M, Hain TC. Early Diagnosis of Usher Syndrome in Infants and Children. Am. J. Otolaryngology, 17:1, 30-34, 1996
35. Rogers MW, Hain TC, Hanke TA, Janssen I. Effects of stimulus parameters and inertial load on the incidence of protective stepping responses in healthy human subjects. Arch Phys Med Rehabil 77:363-368, 1996
36. Peng, GCY, Hain TC, and Peterson, BW. A dynamical model for reflex activated head movements in the horizontal plane. Biological Cybernetics, 75, 309-319, 1996.
37. Ostrowski VB, Hain TC. Wiet R. Pressure Induced Ocular Torsion. Archives of Otolaryngology-Head and neck Surgery. 123:646-649, 1997
38. Hain TC, Ostrowski, VB. Limits of Normal for Pressure Sensitivity in the Fistula Test. Audiology and Neuro-otology 2:384-390, 1997 (<http://BioMedNet.com/karger>)
39. Burnett TA, Freedland MB, Larson CR, Hain TC. Voice F0 Responses to Manipulations in Pitch Feedback, J. Acoustical Soc America, 103, 3153-3161, 1998

40. Riggs LC, Shofner WP, Shah AR, Young MR, Hain TC, Matz GJ. Ototoxicity resulting from combined administration of metronidazole and gentamicin Am J Otol 1999 Jul;20(4):430-4
41. Hain TC, Hanna P, Rheinberger M. Mal de Debarquement. Arch Otolaryngol Head Neck Surg, 1999;125:615-620
42. Peng CGY, Hain TC, Peterson BW. Predictions of vestibulo-collic (VCR) and cervico-collic (CCR) reflex contributions to head stability during trunk perturbations in the horizontal plane. IEEE transactions in Biomedical Engineering, 11/1999
42. Hain TC, Fuller L, Weil L, Kotsias J. Effects of T'ai Chi on Balance. Arch Otolaryngol Head Neck Surg 1999 Nov;125(11):1191-5
43. Hain TC, Burnett TA, Kiran S, Larson CR. Instructing subjects to make a voluntary response reveals the presence of two components to the audio-vocal reflex. Experimental Brain Research, 2000, 130, 2, 133-41
44. Keshner EA, Hain TC, Chen KJ. Predicting control mechanisms for human head stabilization by altering the passive mechanics. J. Vest. Research, 2000.
45. Larson CR, Burnett TA, Kiran S, Hain TC. Effects of pitch-shift velocity on voice F0 responses. J. Acoust Soc Am 107 (1), 2000
46. Hain TC, Helminski JO, Reis IL, Uddin K. Vibration does not improve results of the canalith repositioning procedure. Arch Otolaryngol Head Neck Surg, May 2000, 126(5) 617-22
47. Fife TD, Tusa RJ, Furman JM, Zee DS, Frohman E, Baloh RW, Hain T, Goebel J, Demer J, Eviatar L. Assessment: vestibular testing techniques in adults and children: Report of the therapeutic and technology subcommittee of the American Academy of Neurology. Neurology, 2000, 55:10, 1431-1441
48. Ostrowski V, Hain TC. Vectorial analysis of the Tullio's phenomenon associated with superior canal dehiscence. Otology and Neurotology, 22:61,2001
49. Hain TC, Burnett TA, Larson CR, and Kiran S,. Effects of delayed auditory feedback (DAF) on the pitch-shift reflex. J. Acoustical Soc. Am 109 (5), May 2001
50. Larson CR, Burnett TA, Bauer JJ, Kiran S, Hain TC. Comparison of voice F0 responses to pitch-shift onset and offset conditions. J. Acoust Soc Am, 110 (6), Dec 2865-2648,2001,
51. Peterson BW, Choi H, Hain T, Keshner E, Peng GC. Dynamic and kinematic strategies for head movement control. Ann N Y Acad Sci.942:381-93. 2001
52. Chiu B, Hain TC. Periodic alternating nystagmus provoked by an attack of Meniere's disease. J. Neuro-ophthalmology;22:107-109,2002
53. Chen KJ, Keshner E.A ,Peterson BW, Hain TC, Modeling head tracking of visual targets. JVR 12, 2002, 25-33
54. Mamikoglu B, Wiet RJ, Hain T, Check IJ. Increased CD4+ T cells during acute attack of Meniere's disease. Acta Otolaryngol Dec;122(8):857-60, 2002
55. Hain TC, Uddin M. Pharmacological treatment of vertigo. CNS Drugs 17(2):85-100, 2003
56. Simoneau M, Tinker S, Hain TC, and Lee WA. Effects of predictive mechanisms on head stability during forward trunk perturbation. Exp Brain Res .148(3): 338-49. (2003).
57. Hoistad DL and Hain TC. "Central hearing loss with a bilateral inferior colliculus lesion." Audiol Neurootol 8(2): 111-3. ,2003.
58. Brenner M, Hoistad D, Hain TC. Prevalence of thyroid dysfunction in Meniere's Disease. Archives of Oto HNS, 130/2 226-228 (2004)
59. Squires TM, Weidman MS, Hain TC, Stone HA. A mathematical model for top-shelf vertigo: the role of sedimenting otoconia in BPPV. J Biomech, 2004. 37(8): p. 1137-46.
60. Yacovino DA, Hain TC. (Article in Spanish) [Neck vibration: Usefulness in neurotology] Rev Neurol. 2004 Jun 1-15;38(11):1061-6.
61. Furman, JM and Hain TC. "Do try this at home": self-treatment of BPPV. Neurology, 2004. 63(1): p. 8-9.
62. Xu Y, Larson C, Bauer J, Hain TC "Compensation for pitch-shifted auditory feedback during the production of Mandarin tone sequences. JASA, 2004.
63. Yacovino DA and Hain TC. "[The pharmacology of vestibular disorders]." Rev Neurol 39(4): 381-7. (2004)

64. Moon I, Hain TC. Delayed Quick Spins following Vestibular Nerve Section Respond to Anticonvulsant Medication. *Otol Neurotol* 26:82-85 (2005)
65. Hain TC, Squires TM and Stone HA (2005). "Clinical implications of a mathematical model of benign paroxysmal positional vertigo." *Ann N Y Acad Sci* **1039**: 384-94.
66. Helminski JO, Janssen I, Kotaspouikis D, Kovacs K, Sheldon P, McQueen K, Hain TC. (2005). "Strategies to prevent recurrence of benign paroxysmal positional vertigo." *Arch Otolaryngol Head Neck Surg* **131**(4): 344-8.
67. Gurses S, Dhaher Y, Hain TC, et al. (2005). "Perturbation parameters associated with nonlinear responses of the head at small amplitudes." *Chaos* **15**(2): 2005.
68. Bauer J, Mittal J, Larson CR, Hain TC. Vocal responses to unanticipated perturbations in voice loudness feedback: An automatic mechanism for stabilizing voice amplitude. *JASA* April 2006 119(4) 2363-2371
69. Hain, TC. Head-shaking Nystagmus and New Technology (Editorial). *Neurology*. 68: 17, 1333-1334 (2007)
70. Keshner, E. A., J. Streepey, et al. (2007). "Pairing virtual reality with dynamic posturography serves to differentiate between patients experiencing visual vertigo." *J Neuroengineering Rehabil* **4**(1): 24.
71. Larson, C. R., J. Sun, et al. (2007). "Effects of simultaneous perturbations of voice pitch and loudness feedback on voice F0 and amplitude control." *J Acoust Soc Am* **121**(5 Pt1): 2862-72.
72. Helminski JO, Hain TC. (2007) Evaluation and Treatment of Benign Paroxysmal Positional Vertigo. *Annals of Long-Term Care: Clinical Care and Aging*;15[6]:33-39
73. Chang CP, Hain TC. (2008) "A theory for treating visual vertigo due to optical flow" *CyberPsychology and Behavior. Cyberpsychol Behav* 11(4): 495-8.
74. Hain TC, Cherchi M (2008). "Pulse-synchronous torsional pendular nystagmus in unilateral superior canal dehiscence." *Neurology* **70**(14): 1217-8.
75. Fife TD., DJ Iverson, et al. (2008). "Practice parameter: therapies for benign paroxysmal positional vertigo (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology." *Neurology* **70**(22): 2067-74.
76. Larson CR, Altman KW, Liu H, Hain TC. (2008). "Interactions between auditory and somatosensory feedback for voice F0 control." *Exp Brain Res* **187**(4): 613-21.
77. Simoneau, M., M. Denninger, Hain TC. (2008). "Role of loading on head stability and effective neck stiffness and viscosity." *J Biomech* **41**(10): 2097-103.
78. Helminski, J. O., I. Janssen, et al. (2008). "Daily exercise does not prevent recurrence of benign paroxysmal positional vertigo." *Otol Neurotol* **29**(7): 976-81.
79. Rudisill, H. E. and T. C. Hain (2008). "Lower extremity myogenic potentials evoked by acoustic stimuli in healthy adults." *Otol Neurotol* **29**(5): 688-92.
80. Ajroud-Driss, S., R. Sufit, et al. (2008). "Oculomotor involvement in myotonic dystrophy type 2." *Muscle Nerve* **38**(4): 1326-9.
81. Cherchi, M., N. P. Bellinaso, et al. (2009). "Sound evoked triceps myogenic potentials." *Otol Neurotol* **30**(4): 545-50.
82. Shaikh, A. G., T. C. Hain, et al. (2009) "Oculomotor disorders in adult-onset Still's disease." *J Neurol* **257**(1): 136-8.
83. Yacovino, D. A., T. C. Hain, et al. (2009). "New therapeutic maneuver for anterior canal benign paroxysmal positional vertigo." *J Neurol* **256**(11): 1851-5.
83. Helminski JO, Zee DS, Janssen I, Hain TC. (2010). Effectiveness of particle repositioning maneuvers in the treatment of benign paroxysmal positional vertigo: a systematic review. *Physical Therapy* 90(5) 1-16
84. Cherchi M, Hain TC (2011). Migraine associated vertigo. *Otolaryngol Clin North Am. Apr*;44(2):367-75
85. Hain, T. C. (2011). "Neurophysiology of vestibular rehabilitation." *NeuroRehabilitation* 29(2): 127-141.

--- Chapters, Conference Proceedings ---

1. Zee D.S. and Hain TC: Adaptation to ocular motor disorders: clinical implications. In: Sensorimotor Plasticity - Theoretical, Experimental and Clinical Aspects, Colloque INSERM, pp. 101-120, 1986.
2. Hain TC, Zee DS. and Maria B.: Modification of the dynamics of the vestibulo-ocular reflex by head tilt in patients with cerebellar lesions. In: The Vestibular System: Neurophysiologic and Clinical Research, eds. M.D. Graham and JL Kemink, Raven Press, New York, pp. 217-223, 1987.
3. Hain TC. and Zee DS: Vergence. (Ed. Neetens) Bull Soc Belge Ophthalmol, 237, 145-161, 1989
4. Hain TC. Vertigo. In: Current Therapy in Neurology (Ed. R. Johnson), 1990, also In: Current Therapy in Internal Medicine (Ed. Kassirer), B. C. Decker, 1991
5. Hain TC, Zee DS : The Dizzy Patient: Diagnostic Approaches. In: Controversies in Neurology (Ed. V. Hachinski, 1992).
6. Hain TC, Zee D S : Velocity storage in labyrinthine disorders. New York Academy of Sciences, 656, 1992, 297-304
7. Hain TC, Oculomotor Testing: Background. in The Handbook of Balance Testing (Ed. Jacobson and Newman), Mosby, 1992
8. Hain TC, Oculomotor Testing: Interpretation. in The Handbook of Balance Testing (Ed. Jacobson and Newman), Mosby, 1992
9. Zee DS, Hain TC. Otolith-ocular reflexes. in The Vestibulo-Ocular Reflex and Vertigo (Ed. Sharpe JA, Barber HO), Raven, 1993
10. Hain TC, Spindler J. Head-Shaking Nystagmus. in The Vestibulo-Ocular Reflex and Vertigo (Ed. Sharpe JA, Barber HO), Raven, 1993
11. Hain TC, Spindler J. Head-Shaking Nystagmus. in ENG Report (published by ICS medical, June 1993).
12. Hain TC, Hillman MA. Physiology of the vestibular system. in "Vestibular Rehabilitation" (Ed. S. Herdman), FA Davis, 1993
13. Hain TC. Multidimensional Models of the Vestibulo-ocular reflex. in "Contemporary ocular motor and vestibular research: a tribute to David A. Robinson" (Eds Fuchs AF, Brandt T, Buttner U, Zee Z). 1994, 72-79
14. Hain TC. Episodic Vertigo. In: 1996 Conn's Current Therapy, Ed. R. Rakel p. 869-874. Saunders, Philadelphia, 1996.
15. Keshner EA, Peng G, Hain T, and Peterson BW: Characteristics of head and neck stabilization in two planes of motion. In: T. Mergner & F. Hlavacka (eds), Multisensory Control of Posture. Plenum Press, New York, pp. 83-94, (1995).
16. Peng, GCY, Hain, TC and Peterson, BW (1995) A dynamical model of the head with neck reflex control. Proc 17th Ann International Conf. IEEE Eng. in Medicine & Biology Society, Montreal, Canada.
17. Peng, GCY, Hain, TC and Peterson, BW (1996) How is the head held up? Modeling mechanisms for head stability in the sagittal plane. Proc 18th Ann International Conf IEEE Eng. in Medicine & Biology Society, Amsterdam, The Netherlands.
18. Hart CW, Hain TC. A novel algorithm for EOG analysis. In: Claussen CF, Sakata E, Itoh (Eds), Vertigo, nausea, tinnitus and hearing loss in central and peripheral vestibular disorders. Elsevier, 1995, p33-39
19. Hain TC, Herdman SJ. Dizziness in the Elderly. (Ed Sage JI, Mark MH) Practical Neurology of the Elderly. Marcel Dekker Pub, New York, NY 1996.
20. Hain TC. Vertigo and Disequilibrium. In: Current Treatment in Neurologic Disease, 5th edn, Eds. R. Johnson and J. Griffin, p 8-12, 1997, also In: Current Therapy in Adult Medicine, 4th edn, Kassirir JP and Greene HL, Mosby, p 1358-1361, 1997.
21. Hain TC, Ramaswamy T. Dizziness in the Elderly. In Webster JR (ed). Current Resource Handbook for Geriatrics, 1997 and 1999. <http://www.galter.nwu.edu/geriatrics/>.
22. Hain TC. Approach to the Vertigo Patient In J. Biller (ed). Practical Neurology, Lippincott-Raven, Philadelphia, 1997
23. Hain TC, Micco A. Cranial Nerve 8: Vestibulocochlear Nerve. Textbook of Neurology, Goetz and Pappert Ed, Saunders, 1998, 184-201

24. Hain TC, Kotsias J, Pai CY. Tai Chi: Applications to Neurology. Chapter 19. Alternative and complementary treatment in Neurologic Illness, Weintraub MI, Ed. (Micozzi MS, senior editor). Churchill Livingstone, 2001. 248-254
25. Hain TC, Micco A. Cranial Nerve 8: Vestibulocochlear Nerve. Textbook of Neurology, Goetz and Pappert Ed, Saunders, 2003, (2<sup>nd</sup> Edn)
26. Hain TC, Helminski JC. Vestibular Reflexes. Encyclopedia of Neurological Sciences. (Eds: Aminoff M, Daroff R). Vol 4, pp 657-660, Academic Press, San Diego, 2003
27. Hain TC, Helminski JC. Ototoxic Medications. Kent RD (ed), The MIT encyclopedia of communication disorders. pp 518-520, MIT Press, 2003
28. Hain TC, Yacovino D. Episodic Vertigo. In Conn's Current Therapy 2005
29. Hain TC, Yacovino D. Pharmacological Treatment of Dizziness. Neurologic Clinics of North America. July, 2005.
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--- Manuscripts In Press ---

--- Manuscripts undergoing Review ---

Hain T. Ewald JR. Encyclop[edia of Neurological Sciences, 2<sup>nd</sup> edition, Ed Aminoff MJ and Daroff RB. Submitted for review on 1/15/2012

Shirley D, Hain T, Cherchi M. Triceps acoustically evoked myogenic potentials in patients with spinal cord lesions. Submitted to Neurology on 1/24/2012

--- Manuscripts in preparation ---

- Hain TC. Cherchi M, Rudisill H. VEMP testing in Bilateral Vestibular Loss.
- Hain TC. Cherchi M. A new method of quantifying vestibular function using rotational testing.
- Hain TC, Bagnar T. A mathematical model of gentamicin ototoxicity.
- Hain TC, Patel A. Venlafaxine treatment for vestibular migraine.

## --- Other Output ---

Computer aided education materials (NovaNet and Plato) These materials were developed when I was a medical student at the University of Illinois. They are still in use on “NovaNet”

enzyme - drill regarding use of enzymes in clinical testing  
eponym - drill on medical eponyms  
generic - drill on drug names

Computer software

Rex (real time experimentation) – data acquisition and analysis package for oculomotor and vestibular research.  
MRD (medical record directory) – electronic medical record.

Educational Videotape/CD/DVDs

T'ai Chi for Balance (1994, 1997, 2005). This videotape/DVD contains the training material used for our NIH grant (R21RR09535) where we evaluated T'ai Chi as a modality to improve balance.  
Understanding your Dizziness and Balance Disorders (2006). Educational DVD produced with Dr. David Zee at John's Hopkins. Covers dizziness, BPPV, Bilateral vestibular loss, Migraine, Menieres disease.  
Home exercises for BPPV (2005). Educational DVD produced with Dr. Janet Helminski. Also Spanish Version (2007)  
Dizziness-and-hearing.com Site DVD (yearly update). About 1 gigabyte of educational material and movies relevant to dizziness and hearing disorders.

World-Wide Web Sites mainly authored by Dr. Hain.

<http://www.dizziness-and-balance.com>  
<http://www.tchain.com>  
<http://dizzy-doctor.com>

In aggregate, these educational sites get about 3 million “hits” per month. Many pages are #1 on google.

Magazine Articles:

Hain TC, Oman C.M. Why does reading in a moving car cause motion sickness? Scientific American, July 2003, p. 93

Hain TC, Oman C.M. Sea Legs, in the Last Word. New Scientist, Feb 2005.

Hain TC. Mal de Debarquement Syndrome. Hearing Health (publication of the Deafness Research Foundation), 2005

Hain TC. Benign Paroxysmal Positional Vertigo. Journal Watch Neurology volume 7, #10, page 80, 2005

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