

# Curriculum Vitae

## Richard M. Herman, M.D.

### **Research Professor**

School of Biological and Health Systems Engineering  
College of Engineering  
School of Life Sciences  
College of Nursing Innovation  
Arizona State University  
Tempe, AZ

### **Research Professor**

Department of Pharmacology  
University of Arizona  
Health Sciences Center  
Tucson, AZ

### **AzBio Research Faculty**

Arizona BioDesign Institute  
Arizona State University  
Tempe, AZ

Signature \_\_\_\_\_

Date: \_\_\_\_\_

## Personal Data

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## Recent Research Emphasis

Clinical Neurobiology and Bioengineering Research Laboratories at  
Good Samaritan Regional Medical Center, Phoenix

### ***TYPE II DIABETES, OBESITY, AND CALCITONIN GENE-RELATED PEPTIDE (CGRP)-THE CUTANEOUS MICROCIRCULATION***

Our research question(s) is directed at elucidating whether cutaneous small sensory neuron functional and/or anatomical impairment and microcirculatory dysfunction are markers of (a) pending diabetes in subjects at high risk (e.g., obesity; minority groups such as Mexican- and Native-Americans) for Type II Diabetes; (b) future occurrence of clinical “end-points” of microcirculatory disorders in Type II Diabetes, namely retinopathy, nephropathy, and large-fiber neuropathy; (c) future and present wounds of the foot in patients with Type II Diabetes with/without vasculopathy. These outcomes will lead to the establishment of a pathophysiological model of microcirculatory disease in Type II Diabetes and of a rationale for treatment aimed at both prevention and attenuation of microcirculatory impairment.

We have identified a small sensory nerve neuropathy in morbid obesity subjects with the concept that, CGRP released from perimicrovascular small sensory neurons, is attenuated. As a consequence, these subjects (as well as subjects with Type II diabetes) have altered microvascular function. Such changes infer vulnerability of cutaneous tissue to tissue disruption, i.e., wound occurrence.

CGRP is a novel neuropeptide which is synthesized and stored in the human nervous system, particularly in the dorsal root ganglion of peripheral nerves. It is observed in 75% of small sensory neurons (nociceptors, C-fibers). Animal and human experiments demonstrated that CGRP, when administered locally to skin by intradermal injection, revealed potent, vasodilatory, anti-ischemic and wound healing properties. It is our intention to investigate some of these properties in a population of subjects with Raynaud’s Phenomenon secondary to systemic sclerosis (scleroderma). This exploratory project has been reviewed by the FDA at a Pre-IND meeting. It is our intention to proceed with a Phase I IND application as soon as the FDA response to our meeting has been received. It is our anticipation that the IND will be forthcoming in ~ January, 2008.

We have also applied to the FDA for an Orphan Drug Application using the *indication* for use of CGRP as **wound healing** of digital ulcers in subjects with systemic sclerosis. The alternate hypothesis proposed for the IND is vasodilatation and modulation of the RP attack under conditions of cold stress.

### ***LOCOMOTION***

#### **Electrical Stimulation of the Spinal Cord to Promote Recovery of Walking after Spinal Cord Injury: A Pilot Study**

This is a collaborative effort between Good Samaritan Regional Medical Center, the Bioengineering Department at ASU, and several industrial partners. Funding to initiate the project was provided by an

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ASU-GSRMC grant for a pilot study. NIH and NIDRR funding is anticipated, given that preliminary success in re-establishing functional walking has been achieved in 2 patients.

## ***NEURAL CONTROL OF LOCOMOTION***

This is a collaborative program between faculty and students from the Department of Kinesiology and the laboratories at Banner Good Samaritan Medical Center. The emphasis is on determining the role of muscle bioenergetics in the control of preferred rates of walking under various conditions: e.g., administration of different diets, perturbation of fuel consumption by pharmacological intervention, investigation of specific CNS disability groups. Further, there are experiments being conducted which attempt to compare the neural and metabolic mechanisms subserving preferred rates of leg and arm cycling with preferred rates of walking among normal subjects. Principles of motor control of presumably exotic movements with those of strong evolutionary basis will hopefully evolve.

## **Instructional Activities**

Since 1971, Dr. Herman has collaborated with bioengineering facilities at Drexel University, Philadelphia, PA, Dartmouth College, Hanover, NH, and Arizona State University, Tempe. During this time he has attracted more than 50 students to his laboratories to work directly with him. His mentorship includes spontaneous and planned lectures, journal reading clubs, and critical evaluation of scientific research methods. More than 20 of these students attained MD and PhD degrees with thesis work undertaken in his laboratories. These young scientists have won many awards, published in peer-reviewed journals, and made major contributions toward resolving important research questions.

Presently, one undergraduate student is preparing for his device design class by developing a transdermal system for delivery of CGRP. Prof. Bruce Towe, Harrington Department of Bioengineering at Arizona State University, is collaborating in this effort.

## **Education**

1948	Western Reserve University Cleveland, Ohio	Bachelor Science
1951	New York University School of Education New York, NY	Certificate in Physical Therapy
1959	Queen's University Faculty of Medicine Belfast, North Ireland	M.B., B.CH., B.A.O.

Awards in: Microbiology, Pathology & Medicine

## **Hospital Training**

1959 - 1960	Kings County Hospital New York, NY	Rotating Internship
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1960 - 1963	Bronx Municipal Hospital Center Department of Rehabilitation Medicine Physical Medicine and Rehabilitation Albert Einstein College of Medicine New York, NY	Residency
1963 - 1965	VRA Special Research Fellowship	Fellowship

## Certificates and Licenses

1959	Medical License, Great Britain, General Medicine Council
1960	Medical License, New York State
1960	Medical License, Connecticut
1970	Medical License, Pennsylvania
1965	Board Certification, American Board of Physical Medicine and Rehabilitation
1982	Medical License, New Hampshire
1987	Medical License, Arizona

## Professional Appointments

1952-1954	First Lieutenant, U.S. Air Force, Medical Service Corps
1965-1969	Assistant Professor, Department of Rehabilitation Medicine Albert Einstein College of Medicine, Bronx, NY
1969-1982	Professor, Department of Rehabilitation Medicine Temple University School of Medicine, Philadelphia, PA
1970-1981	Director, Krusen Center for Research and Engineering Moss Rehabilitation Hospital, Philadelphia, PA
1971-1982	Director, Rehabilitation Research and Training Center, Temple University, Philadelphia, PA
1971-1977	Professor and Chairman, Department of Rehabilitation Medicine Temple University School of Medicine, Philadelphia, PA
1971-1982	Adjunct Professor of Biomedical Engineering Drexel University, Philadelphia, PA
1972-1982	Director, Rehabilitation Engineering Center, Moss Rehabilitation Hospital, Philadelphia, PA
1977-1982	Director, Rehabilitation Medicine and Brain Research Laboratories American Oncologic Hospital, Fox Chase Cancer Center, Philadelphia, PA
1979-1982	Research Professor, Department of Neurosurgery Temple University, Philadelphia, PA
1982-1987	Research Professor, Department of Surgery (Neurosurgery) Dartmouth Medical School, Hanover, NH

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1982-1987	Director, Rehabilitation Medicine Unit and Human Performance Laboratories Catholic Medical Center, Manchester, NH
1987-1993	Medical Director, Samaritan Rehabilitation Institute Good Samaritan Regional Medical Center, Phoenix, AZ
1990-1998	Staff Scientist, Department of Anesthesiology (Arizona Pain Institute) Maricopa Medical Center, Phoenix, AZ
1993-1996	Research Director, Arizona State University / Good Samaritan Regional Medical Center Joint Facility for Motor Control Research, Phoenix, AZ
1987-Present	Research Director, Clinical Neurobiology & Bioengineering Research Center Good Samaritan Regional Medical Center, Phoenix, AZ
1988-Present	Research Professor of Bioengineering Arizona State University, Tempe, AZ
1989-Present	Research Professor, Department of Pharmacology, Health Sciences Center College of Medicine, University of Arizona, Tucson, AZ

## Professional Activities

### ***Associations – Past and Present***

American Academy of Physical Medicine and Rehabilitation  
American Association of Electromyography and Electrodiagnosis, President 1986-1987  
American Congress of Rehabilitation Medicine  
American Physiological Society  
International Rehabilitation Medicine Association  
Orthopedic Research Society  
Society for Neuroscience  
Association of Academic Physiatrists  
International Brain Research Organization

### ***Committee and Board Services***

1970 - 1975	Executive Committee Member, Subcommittee on Prosthetics Research and Development, National Academy of Sciences  Executive Committee, United Cerebral Palsy Association Task Force on Man Made Environment  Executive Committee Member of Interstudy, Special Task Force studying the national needs of the disabled, HEW - Task Force on Spinal Cord Injury  IFSECN Subcommittee on Human Reflex Terminology, Munich, Germany
1981 – 1989	Editorial Board, Journal of Motor Behavior Heldref Publications, Washington, D. C.
1999 – 2001	Board of Directors, Harrington House Harrington Arthritis Research Center, Phoenix, AZ
1999-present	Permanent Member Research Study Group National Institutes of Disability and Rehabilitation Research (NIDRR), Washington, DC

## Grants

**Spasticity, Rigidity and Contracture: A Systematic Study of Pathophysiology and Objective Methods of Evaluation**, Principal Investigator, July 1, 1965 - June 30, 1968, Vocational Rehabilitation Administration, HEW

**Neuromotor Control Systems: A Study of Physiological and Theoretical Concepts Leading to Therapeutic Application**, Principal Investigator, September 1, 1968 – 1971, Social and Rehabilitation Service, HEW

**Regional Research and Training**, Temple University, Research and Training Center, Project Director, November 1, 1971 – 1976, Social and Rehabilitation Service, HEW, \$600,000

**Moss Rehabilitation Hospital, Temple University and Drexel University, Rehabilitation Engineering Center**, Project Director, December 1, 1972 – 1976, Social and Rehabilitation Service, HEW, First awarded in U.S., \$600,000/year

**Demonstration of Cancer Rehabilitation Facilities and/or Departments**, Co-Project Director, June 15, 1974 - June 1977, Temple University, Subcontract with Institute for Cancer Institute National Cancer Institute

**Augmented Sensory Feedback Therapy for Cerebral Palsied Children with Cerebral Palsy**, October 1, 1974 - October 1, 1975, United Cerebral Palsy Research and Educational Foundation, Inc.

**Augmented Sensory Feedback Therapy for Cerebral Palsied Children**, July 1, 1976 - July 1, 1978, Easter Seal Research Foundation,

**(1) Disorder of Equilibrium as an Etiological and Predictive Factor in Idiopathic Scoliosis; (2) Visual-Vestibular Interaction and Information Processing of Verbal and Nonverbal Information**, November 1, 1977 - November 1, 1979, Sub-Project, Rehabilitation Engineering Center

**The Effect of Ionizing Radiation on Neuronal Excitability: A Pilot Study**, March 1, 1980 - September 1, 1981, American Oncologic Hospital Project

**Microcomputer Based Rehabilitation**, October 1, 1983 - September 30, 1986, in collaboration with MOCO Inc, National Institute of Mental Health, \$300,000

**Study of Kinematics and Kinetics of Upper Extremity Limb Motion**, July 1, 1984 - June 30, 1986, In collaboration with Dartmouth College, Whittaker Foundation, \$40,000

**Brain Stem Functioning in Idiopathic Scoliosis**, September 1, 1981 - August 31, 1987, Catholic Medical Center, National Institute of Health, \$239,455

**Functional Recovery of Rhythmic Motor Patterns in the Spinal Cord Injured by Neurotransmitter Activation**, July 1, 1986 - December 31, 1987, Catholic Medical Center, Spinal Cord Society, \$107,470

**Intrathecal Baclofen and Spinal Spasticity**, April 1, 1989, Samaritan Rehabilitation Institute, Medtronic Corporation, \$10,000

**Injury in Arizona: Epidemiology**, July 1, 1990 - June 30, 1993,, Arizona Disease Control Research Commission, Principal Investigator, \$75,000

**Intrathecal Baclofen and Morphine**, Principal Investigator, May 1, 1991 - April 30, 1992, Medtronics Corporation, \$50,000

**Acute Hemiplegic Ischemic Stroke – Nalmefene**, Principal Investigator, November 1, 1991 - November 1, 1992, Bakers Cummins Pharmaceuticals, \$100,800

**1) The Safety and Efficacy of A Novel Sensory Neurotoxin Resiniferatoxin, (RTX) When Applied Topically to Skin: A Phase I Study; 2)The Safety and Tolerance of A Novel Sensory Neurotoxin, Tinyatoxin (TYX) When Applied Topically Skin: A Phase I Study**, Principal Investigator February 1, 1994 - December 31, 1996, Afferon Corp., \$134,000

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**Trajectory Modification in Chronic Stroke Patients**, Clinical Principal Investigator, July 1, 1996-June 30, 1998, NIH-SBIR sub-contract, \$250,000

**Restoration of Gait by Electrical Stimulation of the Spinal Cord in Patients with Spinal Cord Injury**, Principal Investigator, September 1999 – 2001, Combined grant with Arizona State University and Good Samaritan Regional Medical Center, \$250,000

### ***PRESENTLY:***

**Portable and Economical Robots for Stroke Rehabilitation**, Co-Principal Investigator, October 1, 2003, NIH. Awarded, \$276,762 (Bannerhealth)

**A Novel Therapy for Recovery of Locomotion in SCI**, Co-Principle Investigator, Pending, NIH, \$911,890 (Bannerhealth)

**Developing Battery-Powered Injectable Stimulator**, Co-Principle Investigator, Pending, NIH, \$796,210 (Bannerhealth)

**Clinical Assessment of a Massed Practice Therapy Device**, Co-Principle Investigator, Pending, NIH, \$451,968 (Bannerhealth)

## **Recent Research Related Presentations**

### **Partial Weight Bearing Strategy for Locomotion Therapy**

Beijing Rehabilitation Medicine Conference, Beijing, PR China, August 25-August 29, 1997

### **Spinal Spasticity Pathophysiology and Pharmacological Management Plasticity Of Spinal Reflexes**

#### **Spinal Spasticity: Pathophysiology And Pharmacologic Management**

International Rehabilitation Medicine Association Conference, Kyoto, Japan, August 31-September 4, 1997

### **The Good and Bad of Neurogenic Inflammation**

Pain Frontiers-1998, Scottsdale, AZ, September 28, 1998

### **Cutaneous Neurogenic Inflammation**

International Spring Pain Conference, Cayman Islands, April 30, 1998

### **Neurobiological Substrate for Pressure Ulcers**

Fifteenth International Seating Symposium in Orlando, FL, March 4, 1999

### **Diabetic Peripheral Neuropathy**

American Diabetes Association Conference, Phoenix, AZ, October 1999

### **Just Say N.O.**

Guest Lecturer, Moss Rehabilitation Hospital 100<sup>th</sup> Anniversary, Philadelphia, PA, November 1999

### **Small Sensory Fiber Dysfunction.**

Spring Brain Conference, Sedona Arizona, April, 2000

### **Severe Neurovascular Pain of the Foot in Diabetics is attenuated by Epidural Spinal Cord Stimulation (ESCS); Augments Vasodilation to a Nitric Oxide (NO) Donor.**

**R. Herman, S. D'Luzansky, I. Cintora, W. Schell, B. Gollihare, J. Herman, M. Juravic, A. DiJurio, C. Bryce.** *17<sup>th</sup> International Diabetes Federation Congress, Satellite Symposium, 2000*

### **Microcirculatory Impairment in the Forearm of Diabetic Patients with Small Sensory Fiber Dysfunction.**

S. D'Luzansky, **R. Herman**, B. Gollihare, J. Herman, M. Juravic, A. DiJurio, C. Bryce.

*17<sup>th</sup> International Diabetes Federation Congress, Satellite Symposium, 2000*

**An Automated Methodology For Quantification Of Epidermal Nerve Fibers.**

BMES Conference, Durham North Carolina, October 2001

**Epidural Spinal Cord Stimulation Improves Activation Of The Oxidative Motor Unit Pool.**

BMES Conference, Durham North Carolina, October 2001

**Restoration of Locomotion in Spinal Cord Injury: Project Update.**

The Arizona Spinal Cord Injury Association Conference, Mesa Arizona, November, 2001

**Spinal Cord Stimulation Facilitates Functional Walking In Chronic, Incomplete Spinal Cord Injured.**

Society for Neuroscience Conference, San Diego California, November, 2001

**Epidural Spinal Cord Stimulation (ECSC) Improves Physical Work Capacity And Reduces Co<sub>2</sub> Production In Chronic Spinal Cord Injured During Walking.**

Society for Neuroscience Conference, San Diego California, November, 2001

**Restoring Walking in Spinal Cord Injured and the Epidemic of Obesity & Diabetes.**

Banner Health System. "Visioning Our Future: Creating The Hospital & Health Campus For The Future", March, 2002

**The Interaction Between Neural and Metabolic Control Systems in the Governing Locomotion.**

University of Washington Medical Center/Department of Rehabilitation Medicine. Seattle, WA, May 2002

**Restoring Locomotor Function in the Spinal Cord Injured.**

Human Anatomy and Physiology Society (HAPS), Phoenix, AZ, May 2002

**Facilitation of Walking in Spinal Cord Injury.**

Phoenix Indian Medical Center, Phoenix Arizona, June, 2002

**Pathophysiology and Treatment of Spasticity.**

Phoenix Indian Medical Center, Phoenix Arizona, June, 2002

**Epidural Spinal Cord Stimulation Facilitates Locomotion in an ASIA C Subject.**

American Paraplegia Society 48<sup>th</sup> Annual Conference, Las Vegas, NV, September, 2002

**The Role of Norepinephrine in the Regulation of the Microcirculation.**

Society of Neuroscience 32<sup>nd</sup> Annual Meeting, Orlando, FL, November, 2002

**Epidural Spinal Cord Stimulation And Partial Weightbearing Therapy For The Restoration Of Locomotion.**

Proceedings of the 2nd Joint Conference of the IEEE EMBS and BMES, Houston, Texas, October, 2002.

**Change of muscle activation pattern by epidural stimulation on a SCI patient.**

Proceedings of the 2nd Joint Conference of the IEEE EMBS and BMES, Houston, Texas, October, 2002.

**Influence of Two Electrical Stimulation (STIM) Modes on Walking Metabolism and Performance in a Spinal-Cord Injured Individual.**

Exp Bio Society Abstr. New Orleans, Louisiana, 2002.

**Epidural spinal cord stimulation and partial weightbearing therapy for the restoration of locomotion.**

M.R. Carhart, J. He, **R. Herman**, S. D'Luzansky, R. Knight. *Proceedings of the 2nd Joint Conference of the IEEE EMBS and BMES, 2002*

**Change of muscle activation pattern by epidural stimulation on a SCI patient.**

H. Huang, J. He, M. Carhart, S. D'Luzansky, **R. Herman**. *Proceedings of the 2nd Joint Conference of the IEEE EMBS and BMES, 2002*



**Influence of Two Electrical Stimulation (STIM) Modes on Walking Metabolism and Performance in a Spinal-Cord Injured Individual.**

W.T. Willis, M. Carhart, A. Thompson, J. He, J. Thresher, **R. Herman**. *Exp Bio Soc*, 2002

**Influence of Two Electrical Stimulation (STIM) Modes on Walking Metabolism and Performance in a Spinal-Cord Injured Individual.**

Exp Bio Society Abstr, San Diego, California, 2003.

**Facilitation of Locomotion by Epidural Spinal Cord Stimulation in Wheelchair Dependent SCI: A Dichotomy Between Biomechanical and Metabolic Control.**

*Scientific Institute of Santa Lucia Medical School*. Rome, Italy. October, 2003.

**Can Wheelchair Dependent Spinal Cord Injured People Walk Again?**

*SWACSM, Special Presentation*, November 8, 2003

**Restoration of Gait Function in Wheelchair-Dependent, Incomplete Spinal Cord Injured Subjects.**

*SWACSM, Symposium*, November 8, 2003

**Influence of Two Electrical Stimulation Modes on Walking Performance in a Spinal Cord Injured Individual.**

M. Carhart, W. Willis, **R Herman**. *Exp Bio Soc*, 2003

**Influence of Two Electrical Stimulation Modes on Walking Performance in a Spinal Cord Injured Individual.**

W.T. Willis, M. Carhart, A. Thompson, J. He, J. Thresher, **R. Herman**, *Exp Bio Soc*, 2003

**Mechanical and Metabolic Changes in Gait Performance with Spinal Cord Stimulation and Reflex-FES.**

W. Willis, A. Thompson, H. Huang, S. D'Luzansky, J. Thresher, **R. Herman**, J. He. *Proceedings, 25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 2003

**Facilitation of Locomotion by Epidural Spinal Cord Stimulation in Wheelchair Dependent SCI: A Dichotomy Between Biomechanical and Metabolic Control.**

R.M. Herman. *Scientific Institute of Santa Lucia Medical School*, 2003

## Journal Publications

Baskin N, **Herman R**. Attitudes Toward Cerebral Palsy. *C P Rev*, 1951

**Herman R**. Paediatric Rehabilitation. *Brit Med Stud Assn Bull*. 56-57, 1958

**Herman R**. The Physiologic Basis of Tone, Spasticity and Rigidity. *Arch Phys Med*. 43:108-114, 1962

**Herman R**. Reflex Activity in Spinal Cord Lesions. *Proceedings of the 11th Annual Spinal Cord Injury Conference*. 100-106, 1962

**Herman R**. Neurophysiological and Neuropharmacological Aspects of Muscle Tone in Spastic Cerebral Palsy Children. *Abstr J Bone Joint Surg*. 45A:1557, 1963

**Herman R**, Byck R. Differential Peripheral Nerve Blockade by Procaine and Local Cold. *Clin Pharmacol and Ther.* 5:848-851, 1964

**Herman R**. Reflex Activity in Spinal Cord Lesions. *Am J Phys Med.* 43:252-259, 1964

Schaumburg H, **Herman R**. The Silent Period of the Gastrocnemius and Soleus Muscle. *Bull AAEE* 12:13, 1965

**Herman R**, Schaumburg H. Alterations in Dynamic and Static Properties of the Stretch Reflex in Patients with Hemiplegia. *Bull AAEE* 13:26, 1966

**Herman R**. The Experimental Basis of Abnormal Muscle Tone. Albert Einstein College of Medicine, Department of Rehabilitation Medicine, May, 1966

Schaumburg H, Byck R, **Herman R**, Rosengart D. Peripheral Nerve Damage by Cold. *Arch Neurol.* 16:103-110, 1967

**Herman R**, Bragin S. Function of the Gastrocnemius and Soleus Muscles. A Preliminary Study in the Normal Human Subject. *J Amer Phys Ther Assoc.* 47:105-113, 1967

**Herman R**, Schaumburg H. Dynamic and Static Sensitivity of the Stretch Reflex in Spastic Cerebral Palsy. *Develop Med Child Neurol.* 9:487-492, 1967

**Herman R**. Relationships Between the H Reflex and the Tendon Jerk Response. *Bull AAEE* 14:11-12, 1967

**Herman R**. The Silent Period of Human Muscle. *Bull AAEE* 114:16, 1967

Morrison D, **Herman R**. The Effect of Peripheral Nerve Blocking With Phenol on Spasticity - A Physiological Study. *Arch Phys Med.* 48:687, 1967

**Herman R**. The Interaction Between Rheologic and Reflex Properties in Spastic Hemiplegia. *Bull AAEE* 14:17, 1967

**Herman R**, Schaumburg H, Reiner S. A Rotational Joint Apparatus. A Device for Study of Tension-Length Relations of Human Muscle. *Med Res Engin.* 6:18-20, 1967

**Herman R**. Evaluation of Chlorzoxazone on Tonic Stretch Reflex in Clinical Spasticity. *Curr Ther Res* 9:537-543, 1967

**Herman R**. The Interaction Between Rheologic and Reflex Properties in Spastic Hemiplegia. *Arch Phys Med.* 48:682-683, 1967

**Herman R**. Properties of the Stretch Reflex in Patients with Spastic Hemiplegia. *Arch Phys Med.* 49:199-204, 1968

Schaumburg H, **Herman R**. Studies of the Human Stretch Reflex. *J Neurol Sci.* 7:189-192, 1968

**Herman R**. Reflex and Rheologic Properties of the Spastic Gastrocnemius-Soleus Muscle Group. *Arch Phys Med Rehab.* 49:723-727, 1968

Soriano DB, **Herman R**, Rosomoff H. Experimental Relief of Spasticity in Cat by Lumbo-Sacral Radio-Frequency Cordotomy. *Trans Amer Neuro Assoc.* 93:282-283, 1968

**Herman R**. Physiological Concepts of Human Voluntary Activity. *Electromyography* 8:(Suppl.) 97-100, 1968

**Herman R**. Alterations in the Dynamic and Static Properties of the Stretch Reflex Obtained at Various Rates of Stretch During Different Stages of Clinical Spasticity. *Electroencephalogr Clin Neurophysiol* 25: 408-409, 1968

**Herman R**, Schaumburg H. Alterations in Dynamic and Static Properties of the Stretch Reflex in Patients with Spastic Hemiplegia. *Arch Phys Med Rehabil* 49: 199-204, 1968.

**Herman R**. Silent Period During Isometric and Isotonic Contraction. *Arch Phys Med.* 50:642-654, 1969

**Herman R**, Mayer N. The Silent Period and Control of Isometric Contraction of the Triceps Surae Muscle. *Electromyography*. 9:79-84, 1969

**Herman R**. Relationship Between the H Reflex and the Tendon Jerk Response. *Electromyography*. 9:359-370, 1969

**Herman R**. The Silent Period During Control of Skilled Motor Performance Electroencephalogr Clin Neurophysiol 27: 715, 1969

**Herman R**. The Myotatic Reflex: Clinico-Physiological Aspects of Spasticity and Contracture. *Brain*. 93:273-312, 1970

**Herman R**. Electromyographic Evidence of Some Control Factors Involved in the Acquisition of Skilled Performance. *Amer J Phys Med*. 49:177-191, 1970

Mecomber SA, **Herman R**. Effects of Local Hypothermia on Reflex and Voluntary Activity. *J Amer Phys Ther Assoc*. 51:271-282, 1971

Soriano D, **Herman R**. Radiofrequency Cordotomy for Relief of Spasticity in Decerebrate Cat. *J Neurol Neurosurg Psych*. 34:628-636, 1971

**Herman R**, Mecomber S. Vibration-Elicited Reflexes in Normal and Spastic Muscle in Man. *Amer J Phys Med*. 50:169-183, 1971

**Herman R**. Postural Control and Therapeutic Implications. In: *The Advances in Orthotics*. Dundee, Scotland, 1971

**Herman R**, Mayer N, Mecomber SA. The Pharmacophysiology of Dantrolene Sodium. *Amer J Phys Med*. 51(6):296-311, 1972

Mayer N, Mecomber SA, **Herman R**. Treatment of Spasticity with Dantrolene Sodium. *Amer J Phys Med*. 52(1):18-29, 1973

**Herman R**, Freedman W, Monster AW, Tamai Y. A Systematic Analysis of Myotatic Reflex Activity in Human Spastic Muscle. In *New Developments in EMG*. Vol. 3, J. Desmedt (ed.), Karger:Basel, pp. 556-578, 1973

**Herman R**, Freedman W, Meeks SA. Physiological Aspects of Hemiplegic and Paraplegic Spasticity. In *New Developments in EMG*. Vol. 3, J. Desmedt (ed.), Karger:Basel, pp. 579-588, 1973

Monster, A. W., **Herman, R.**, and Altland, N. R. Effect of the Peripheral and Central "Sensory" Components in the Calibration of Position. In *New Developments in EMG*; Vol. 3, J. Desmedt (ed.), Karger, Basel, pp. 383-403, 1973

Monster AW, **Herman R**, Meeks S, McHenry J. Cooperative Study for Assessing the Effects of a Pharmacological Agent on Spasticity. *Amer J Phys Med*. 52(4):163-188, 1973

**Herman R**. Augmented Sensory Feedback in the Control of Limb Movement. In *Neural Organization and Its Relevance to Prosthetics*. Symposia Specialists. Florida, pp. 197-215, 1973

**Herman R**, Cook T, Cozzens B, Freedman W. Control of Posture and Locomotion. RB Stein, KB Pearson, RS Smith, JB Redford (eds.). Plenum Press:New York, pp. 363-388, 1973

Tamai Y, Monster AW, **Herman R**, Cozzens B. Effect of Dantrolene Sodium on the Gastrocnemius Medialis and Soleus of the Cat. *Wakayama Medical Reports* 16:1-9, 1973

Meier RH, Meeks ED, **Herman RM**. Stump-Socket Fit of Below-Knee Prosthesis: Comparison of Three Methods of Measurement *Arch Phys Med Rehabil* 54: 553-558, 1973

Tamai Y, Monster AW, **Herman R**, Cozzens B. Reflex Tension During Sinusoidal Movement in Gastrocnemius and Soleus of Decerebrated Cat. *Jap J Physiol*. 24:1-18, 1974

Meier R, Glass D, **Herman R**. Rehabilitation Medicine: Planning a Residency Curriculum. *Arch Phys Med Rehab*. 55:285-289, 1974

- Herman R**, Freedman W, Mayer N. Neurophysiologic Mechanisms of Hemiplegic and Paraplegic Spasticity: Implications for Therapy. *Arch Phys Med.* 55:338-343, 1974
- Reid R E, **Herman R**, Teng CS. Attempts at Altering Ureteral Activity in the Unanesthetized, Conditioned Dog with Commonly Employed Drugs. *Invest Urol.* 12:74-78, 1974
- Tamai Y, **Herman R**, Freedman W. Alteration in Amplitude and Phase Angle of Muscle Tension Due to Imposed Sinusoidal Movement During Stimulation with Modulated Pulse Trains. *Jap J Physiol*, 1974
- Freedman W, **Herman R**. Inhibition of Electromyographic Activity in Human Triceps Surae Muscle During Sinusoidal Foot Rotation. *J Neurol, Neurosurg, Psychiat.* 38:336-345, 1975
- Freedman W, Minassian S, **Herman R**. Functional Stretch Reflex (FSR) - A Cortical Reflex? In: Progress In Brain Research, Vol. 44, (Understanding the Stretch Reflex), S Homma (ed), Elsevier:North Holland, Biomedical Press, pp. 487-490, 1976
- Herman R**, Cook T, Freedman W. Feedback Control of Postural Reactions. In Neurophysiologic Aspects of Rehabilitation Medicine, Charles C. Thomas:Springfield, Illinois, pp. 62-85, 1976
- Herman R**. Wirta R, Bampton S, Finley FR. Human Solutions for Locomotion: Single Limb Analysis. In Neural Control of Locomotion; R Herman, S Grillner, P Stein, D Stuart (eds), Advances in Behavioral Biology, Vol. 18, Plenum Press:New York and London, pp. 13-50, 1976
- Craik R, **Herman R**, Finley FR. Human Solutions for Locomotion: Interlimb Coordination. In Neural Control of Locomotion. Advances in Behavioral Biology, Vol. 18, Plenum Press:New York and London, pp. 65-76, 1976
- Freedman W, Wannstedt G, **Herman R**. EMG Patterns and Forces Developed During Step-Down. *Am J Phys Med* 55:275-290, 1976
- Wannstedt G, **Herman R**. Use of Augmented Sensory Feedback to Achieve Symmetrical Standing. *Phys Ther.* 58:553-559, 1978
- Herman R**, Stuyck J, Yamamoto H, Herr B. Vestibular Functioning in Idiopathic Scoliosis. *Trans Orthopaedic Res Soc.* 145, 1979
- Maulucci R, **Herman R**. Non-Visual Control of Vestibulo-Ocular Suppression in Man. *Soc Neurosci Abstr.* 5:692, 1979
- Herman R**, MacEwen GD. Idiopathic Scoliosis: A Visual-Vestibular Disorder of the CNS. Sixth Symposium on Scoliosis. PA Zorab (ed), Academic Press:New York 61-69, 1980
- Kirs P, **Herman R**. Neuromotor and Neuropsychological Manifestations of Total Therapy: In Children with Acute Lymphoblastic Leukemia. *Cancer Treatment Reviews* 7:1-10, 1980
- Leiper C, Miller A, Lang Jr, **Herman R**. Sensory Feedback for Head Control in Cerebral Palsy. *Phys Ther.* 81:512-518, 1981
- Herman R, **Herman R**, and Maulucci R. Visually Triggered Eye-Arm Movements in Man. *Exp Brain Res.* 42:392-398, 1981
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