

CURRICULUM VITAE OUTLINE

Gerald J. Herbison, M.D.

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CURRICULUM VITAE

GERALD J. HERBISON, M.D.

PERSONAL INFORMATION

Business Address Thomas Jefferson University Hospital
Department of Rehabilitation Medicine
25 S. 9th Street
Philadelphia, PA 19107

Business Telephone (215) 955-6567

Home Address 185 Woodstock Drive
Villanova, PA 19085

Home Telephone (610) 527-3556
Home FAX (610) 527-0798
Email g.herbison@gmail.com
Citizenship USA
Spouse's name Patricia Ann Herbison (Patty)

PRESENT POSITIONS:

Professor 1976-present
Department of Rehabilitation Medicine
Jefferson Medical College
Thomas Jefferson University
Philadelphia, PA

Clinical Professor 1984-present
Department of Occupational Therapy
College of Allied Health Sciences
Thomas Jefferson University
Philadelphia, PA

Clinical Professor 1984-present
Department of Physical Therapy
College of Allied Health Sciences
Thomas Jefferson University
Philadelphia, PA

EDUCATION:

St. Joseph's High School 1955
Cleveland, Ohio

Rockhurst College 1955-1956
Kansas City, Missouri

John Carroll University 1956-1958
Cleveland, Ohio

Stritch School of Medicine 1958-1962
Loyola University

Chicago, IL
M.D.

POST GRADUATE TRAINING:

Charity Hospital 1962-1963
New Orleans, LA
Internship

Bronx Municipal Hospital Center 1963-1966
Bronx, New York
Albert Einstein Medical College of Yeshiva University
Residency

ACADEMIC POSITIONS:

Instructor 1966-1968
Georgetown University Medical School
Washington, DC

Assistant Professor 1968-1970
Temple University Health Sciences Center
Philadelphia, PA

Associate Professor 1970-1976
Department of Rehabilitation Medicine
Jefferson Medical College
Thomas Jefferson University
Philadelphia, PA

Director of Research 1970-1996
Department of Rehabilitation Medicine
Thomas Jefferson University
Philadelphia, PA

Acting Chairman 1997-1998
Department of Rehabilitation Medicine
Jefferson Medical College
Thomas Jefferson University
Philadelphia, PA

STAFF POSITIONS:

Medical Officer 1966-1968
District of Columbia General Hospital
Washington, DC

Associate Director 1968-1969
Department of Physical Medicine and Rehabilitation
Temple University Health Science Center

Philadelphia, PA

Consulting Physician 1975-1980
Easter Seal Society
Philadelphia, PA

Program Director 1970-1991
Department of Physical Medicine and Rehabilitation
Children's Rehabilitation Hospital
Philadelphia, PA

HOSPITAL AFFILIATIONS:

Thomas Jefferson University Hospital, Philadelphia, PA 1970 - present
Lankenau Hospital, Philadelphia, PA
Children's Rehabilitation Hospital, Philadelphia, PA 1970-1991
Magee Rehabilitation Hospital, Philadelphia, PA

BOARD CERTIFICATION:

American Board of Physical Medicine and Rehabilitation 1968
American Board of Electrodiagnostic Medicine 1989

MEDICAL LICENSURE: Commonwealth of Pennsylvania (MD-009972-E)

HONORS:

The 16th Annual Walter J. Zeiter Lecturer 1983
American Academy of Physical Medicine and Rehabilitation

The Fifth Annual Sidney Licht Lectureship 1984
Sesquicentennial Visiting Professor, Ohio State University,
Department of Physical Medicine, April 9-10

The Eighth Annual Lewis A. Leavitt, M.D., Memorial 1985
Lectureship, Baylor School of Medicine, June 14

National Teaching Award in Physical Medicine and 1990
Rehabilitation, University of Medicine and Dentistry-New Jersey,
March 22-23

L Wu, B.S., recipient of the William Potter Wear Research 1993
Prize; Jefferson Medical College. See No. 63, Publications

LM Kornsgold, B.A., recipient of the Volunteer Faculty Award 1994
for Research; Jefferson Medical College. See No. 79, Publications

G Gutierrez, M.D., recipient of the Elizabeth and Sidney Licht 1994
Award for Excellence in Scientific Writing; American Congress of
Rehabilitation Medicine. See No. 74, Publications

PGY4 Attending of the Year Award, Department of Rehabilitation Medicine, Thomas Jefferson University Hospital	1993, 1994
Excellence in Teaching Award from the Graduating Residents, Department of Rehabilitation Medicine, Thomas Jefferson University Hospital	1994
Glen E. Gresham Visiting Professor, Department of Rehabilitation University of Buffalo, April 20-21, 1995	1995
The Fifteenth Annual Sidney Licht Lectureship The Ohio State University, Department of Physical Medicine and Rehabilitation, May 3, 1996	1996
Distinguished Clinician Award American Academy of Physical Medicine & Rehabilitation	1996, 2011
Distinguished Lecturer; Medical College of Ohio Overuse of Partially Denervated Muscle, January 10, 1997	1997
Distinguished Academician Award Association of Academic Physiatrists, February, 1997	1997
Sixteenth Annual James Rae Lecture University of Michigan, April 23, 1999	1999
Rusk Lectureship, Department of Physical Medicine & Rehabilitation Rusk Rehabilitation Center/HealthSouth University of Missouri-Columbia, May 5, 2000	2000
Teaching Physician of the Year, Department of Rehabilitation Medicine Thomas Jefferson University	2000, 2002
Distinguished Physician Award American Association of Electrodiagnostic Medicine	2001
Robert H. Condon, MD Teaching Award Department of Rehabilitation Medicine Thomas Jefferson University	2000, 4, 8, 12
Gerald J Herbison, M.D. First Annual Award for Mentorship Department of Rehabilitation Medicine Thomas Jefferson University	2005
Lambert Lecture American Association of Neuromuscular and Electrodiagnostic Medicine	2007
Lifetime Achievement Award; San Diego	

American Association of Neuromuscular and Electrodiagnostic Medicine 2009

PROFESSIONAL COURSES AND MEETINGS:

Lower Extremity Prosthetics Course New York University, New York NY	1963
Lower Extremity Orthotics Course New York University, New York NY	1964
The Health Professional as a Consultant George Washington University Washington, DC	1967
Clinical Psychiatry for the Practicing Physician Georgetown University Washington, DC	1967
Myelomeningocele Diagnosis and Treatment American Academy of Orthopedic Surgeons Hartford, CT	1975
The Management of Cerebral Palsy University of Minnesota Rochester, MN	1978
Stroke Rehabilitation Pharmacology: Anti-Inflammatory Agents and Analgesics Cardiac Rehabilitation Strategies for the Management of Spasticity Prosthetics American Academy of PM&R, Washington, DC	1980
Pediatric Rehabilitation Intervention Strategies in CNS Dysfunction How to Get Published in the "Archives of PM&R" Tendon Transfers - Indications and Management Graduate Education in PM&R - Manpower Recruitment and Program Development American Academy of Physical Medicine and Rehabilitation, Houston, TX	1982
Mayo Clinic Foundation Electromyography Course Rochester, MN	1983
Eleventh Neuromuscular Disease Syndrome Houston, TX	1983
Recovery of Function: The Challenge of Spinal Cord Injury American Paralysis Association, Tenth Anniversary Conference	1992

Piscataway, New Jersey

University of the Arts

Philadelphia PA

Non-credit courses aimed at supplementing educational skills

Each course 10 weeks at 3 hours per week

Adobe After Effects—Animation		2005
Final Cut Pro Video editing		2005
Adobe Creative Suites for Beginners	Fall	2008
Adobe Photoshop CS3 for Print & Web	Winter	2009
Adobe After Effects—Animation	Spring	2009
Adobe for Print	Summer	2009
Web Design	Fall	2009

PROFESSIONAL SOCIETIES:

American Academy of Physical Medicine and Rehabilitation	1970-present
Study Guide on Rehabilitation of Diseases Affecting Nerve and Muscle	
Faculty Member	1975
Chairperson and Faculty Member	1981; 1987
Co-Chairperson and Faculty Member	1994
American Association of Neuromuscular & Electrodiagnostic Medicine	1974-present
Course Committee	
Member	1984-1986
Chairperson	1985-1986
Education Committee	
Chairperson of Minimonographs	1987-1990
Program Committee Member	1991-1993
Oral Examiner	1985-1986
Board of Directors	1993-1996
American Board of Electrodiagnostic Medicine	1997-2004
Examination Committee	1999-2004
Chairman: Credentials Committee	1998-2004
Fellow of American College of Physicians	1981-1997
American Congress of Rehabilitation Medicine	1970-1997
American Medical Association	1966-present
Pennsylvania Academy of Physical Medicine and Rehabilitation	1968-2005
Pennsylvania Medical Society	1968-present
Philadelphia Society of Physical Medicine and Rehabilitation	1968-present
Program Chairman	1969-1970 1982-1983

ADVISORY COMMITTEES:

Veterans Administration Merit Review Board for the Rehabilitative Engineering and Development Services	1979-1980
American Board of Physical Medicine and Rehabilitation Examination Subcommittee	1985-1987
Journal Oversight Committee American Academy of Physical Medicine and Rehabilitation	2008-present

NATIONAL MEETINGS AND SYMPOSIA:

American Institute of Biological Sciences Life Sciences Planning Meeting for Research to be Conducted on a Space Station Arlington, VA	June 1985
Task Force on Medical Rehabilitation Research Science Policy Analysis and Development Branch Office of Science Policy and Legislation Co-Chairman: Neurophysiological Dysfunction Panel National Institutes of Health Hunt Valley, MD	June 1990
National Institutes of Health Participant: Introduction to Congress of the contributions animals have made to rehabilitation research and practice <i>Application of research to treatment of major disabling conditions</i> Washington, DC	June 1990
National Rehabilitation Research and Training Center in Spinal Cord Injury Participant: Employment after Spinal Cord Injury Symposium <i>Functional Recovery Research</i> Jefferson Medical College of Thomas Jefferson University Philadelphia, PA	October 1991

EDITORSHIPS:

Archives of Physical Medicine and Rehabilitation Editorial Board Member	1975-1997
Academy Editor	1979-1982
Chairperson of Editorial Board	1982-1988
Chairperson of Review Article Committee of Editorial Board	1988-1997
Academy Editor	1994-1997
Muscle and Nerve Member of Editorial Board	1983-1986

PRESENTATIONS AT THE ANNUAL MEETINGS

AMERICAN ASSOCIATION OF NEUROMUSCULAR AND ELECTRODIAGNOSTIC MEDICINE:

- 1983, 1984,
1989, 1990,
1992, 1993 *The needle electrode examination*
- 1984, 1986,
1987, 1988,
1990, 1991,
1992 *Breakfast sessions on spontaneous potentials*
- 1985, 1986,
1987, 1990 *Workshop on fundamentals of electromyography*
- 1989, 1993 *Course Director: Fundamentals in electrodiagnostic
medicine in nerve and muscle disease*
- 1991, 1992 *Workshop on proximal conduction*
- 1993 *Breakfast session on median nerve neuropathies*
- 1993, 1994
1995, 1996 *Workshop on wave form analysis*
- 1994 *Chairperson and presenter: case presentations
of neuromuscular problems*
- 1994 *Dinner seminar: Abnormal Spontaneous Muscle Activity*
- 1995 *Breakfast with Dr. Herbison*
- 1996 *Chairperson of Course: Practical Electrodiagnostic Medicine:
Pitfalls and Analysis; Presenter on Uselessness of Proximal
Motor Conduction*
- 1996 *Breakfast session on Electrical and Manual Strength Testing*
- 1997, 1998, 1999
1997 *Workshop on Electrical and Manual Muscle Testing
Breakfast session on Uselessness of Proximal Motor Conduction*
- 1997 *Dinner session on Radiculopathies*
- 1998 *Dinner session on Post Polio Syndrome*

- 2000 *Workshop on Ulnar Techniques*
Dinner Session on Proximal Conductions
Plenary Session on Treatment of Neuropathies
- 2001, 2002, 2004 *Workshop on Ulnar Techniques*
- 2003 *Workshop on Basic Conduction*
Breakfast Session on The Hand: Why it Does and Doesn't Work
- 2005, 2006, 2007 *Workshop on Anatomy & Kinesiology of the Shoulder*
- 2008, 9, 10, 12 *Workshop on Anatomy & Kinesiology of the Upper Extremity*
- 2010, 2012 *Workshop on Gait*

**AMERICAN ACADEMY OF PHYSICAL MEDICINE AND REHABILITATION AND
AMERICAN CONGRESS OF REHABILITATION MEDICINE:**

- 1971 *Muscle biochemistry and the physiological effect of exercises*

The effect of exercise on muscle reinnervation

The effect of electrical stimulation on muscle during denervation

The H-reflex in patients with Parkinsons disease treated with L-Dopa
- 1972 *The effect of overload on reinnervating rat plantaris and soleus*

Research priorities under adverse economic conditions: muscle atrophy

A response of different work loads in compensatory hypertrophy of red and white muscles

A study of muscle atrophy in experimental arthritis
- 1973 *The evaluation of abdominal problems in patients with spinal cord lesions*

Weight of rat ventricle in different exercises

Rehabilitation followup of the accident disabled
Muscle weight and protein content of skeletal muscle during the initial period of reinnervation

The effect of overload on reinnervating rat soleus and plantaris

A review of the effect of various atrophic processes on skeletal muscle: anatomic, biochemical and physiological correlations
- 1974 *Bizarre high frequency discharges in a patient with unilateral quadriceps hypertrophy - a case report*

- Protein changes in myocardium of denervated rats*
- Research priorities in pediatric rehabilitation*
- The effect of various atrophic processes on skeletal muscles*
- The effect of synergistic tenotomy on chronically denervated muscles*
- 1975 *Exercise for muscle strength*
- Developments in normal muscle histology, histochemistry, biochemistry*
- The pathomechanics of high frequency potential*
- Slow (type I) fibers of rat soleus and plantaris during early denervation*
- 1975 *A comparison of muscle atrophy one week after cast immobilization, denervation, inflammation and tenotomy*
- Effect of isometric vs endurance exercise on physiologic properties of human skeletal muscle*
- 1976 *Cast immobilization: effect of cytoarchitecture of the adult rat soleus and plantaris muscles*
- Exercise effect on reinnervating rat muscle*
- Human thumb adductor contraction time, post exercise*
- Acute denervation atrophy of muscle fibers in red and white regions of rat plantaris*
- C-14 leucine incorporation in skeletal muscle proteins of the rat during denervation and reinnervation*
- Exercise-induced pathology in rat skeletal muscle*
- 1977 *Reinnervation in the skeletal muscles*
- Physiological changes after crush denervation in rat soleus and plantaris muscles*
- Protein synthesis after dynamic climbing and changes after deconditioning*
- Endurance and strengthening exercise adaptation: three Cardiac changes*
- Effect of isotonic weight lifting on the rat plantaris muscle*
- 1978 *Physiological changes after cast immobilization in reinnervating slow and fast muscles of the rat*
- Regulation of muscle contractility*

Ultrastructural changes in chronically denervated muscles after passive stretch

Contraction time (CT), half fatigue time (1/2 FT), and relative strength (Po/Pt) in skeletal muscle after a new "isometric type" exercise

1979 *Changes in reinnervated muscles of adult rat after casting and decasting: I. muscle weights, protein content and C-14 leucine incorporation in the gastrocnemius*

Changes in reinnervated muscles of adult rat after casting and decasting: II. histologic and physiologic changes in soleus and plantaris

Adaptations to strengthening exercise in skeletal muscle

1980 *Electrical stimulation: effect on ACh sensitivity and fibrillations in crush-denervated muscles*

Electrical stimulation: effect on number of slow and fast muscle fiber types

Isometric twitch and tetanic tension and relative strength of the rat muscle in compensatory hypertrophy isometric twitch changes after direct and indirect electrical stimulation of rat soleus

Electrical stimulation of rat soleus

1981 *Peripheral reinnervation of rat muscle: effect of indirect electrical stimulation*

Denervated rat muscle: the inhibition of alkaline myofibrillar protease

1982 *Arthritic hand management principles*

Peripheral reinnervation of rat muscle: sciatic nerve and soleus muscle changes after L5 root removal

Indirect electrical stimulation of muscle: histochemical changes in rat soleus

Direct electrical stimulation of rat muscle: changes in Ca and Mg content

Peripheral neurophysiologic mechanism of pain in Guillain-Barre syndrome

Deep venous thrombosis as a complication of phenol injection to control spasticity

1983 *Isometric contractile properties of spinal nerve damaged rat soleus muscles*

Pediatric spinal cord injury: case presentation and mechanism of injury with correlation to the level of termination of the spinal cord

Evaluation of peripheral reinnervation of muscle in spinal nerve damaged rats

Physiologic principles of sports activity

- 1984 *The effect of long-term exercise on isometric force development in partially denervated muscle*
- Effect of aging on isometric contractile properties of partially denervated rat muscle*
- Effect of isometric and isokinetic exercise on quadriceps muscle strength in adult female human subject*
- 1985 *Effect of aging on isometric contractile properties of partially denervated rat muscle*
- A method for assessing the safety of electrical stimulation in a patient with a sophisticated pacemaker*
- 1986 *Peripheral neuropathy didactic session*
- Enhancement of venous blood flow velocity by low frequency electrical Stimulation in normal human subjects*
- Recovery isometric contractile properties in partially denervated rat soleus*
- 1987 *How to publish in the Archives*
- Electrical stimulation as an effective prophylaxis for DVT in SCI subjects*
- Doppler evaluation of blood flow velocity in the spinal cord injured subjects*
- Effect of long-term endurance and strengthening exercises on slow and fast muscles of the rat*
- Update weekly conference system - multidisciplinary review of 70-100 patients*
- Recovery of rat soleus after partial denervation*
- 1988 *Ethics and rehabilitation: induction*
- Deep vein thrombosis: prophylaxis in acute spinal cord injured patients*
- Evaluation of isometric and isokinetic strength of the quadriceps in post-polio subjects*
- Disseminated fat necrosis: a rehabilitation challenge*
- Recovery of isometric force and fiber areas in partially denervated rat muscle*
- Changes in nerve conduction and phosphorous nuclear magnetic resonance (^{31}P -NMR) spectra of the gastrosoleus muscles of rats during denervation-reinnervation*
- 1989 *Needle electromyography and recruitment*

Quadriceps muscle fatigue and recovery after maximal isometric contractions in healthy male and female subjects

Electrical stimulation: effect on maximum voluntary contraction of the quadriceps in normal subjects

Fatigue and recovery of the reinnervated rat plantaris

Predicting functional motor recovery in quadriplegia: Superiority of the 72-hour exam over the 23-hour exam

1990 *EMG: basic/needle*

Resolution of positive waves following needle electromyography in rats

Recovery of motor power as predicted by sensory preservation at the zone of spinal cord injury in quadriplegic subjects

Course of motor recovery at the zone of injury in complete spinal cord injury

1991 *Cosmetic, functional, independent: self-help aids*

1992 *Chronic overwork of the rat extensor digitorum longus by ablation of the tibialis anterior muscles.*

*Future role of muscle strengthening exercises in rehabilitation management
Sensory root level recovery in patients with Frankel A quadriplegia.*

1993, 1994 *Indispensability of the voluntary and electrically induced manual muscle test*
1995, 1996 *in clinical and electrodiagnosis and prognosis*

1994, 1997, 1999 *Uselessness of proximal conduction.*

1995, 6, 7, 9 *Waveform identification in clinical electromyography*
2000, 2, 3, 4, 5
2008, 10, 11, 12

1995, 1999 *Needle placement of commonly tested muscles in clinical EMG*

1996, 1997 *The Hand: What makes it work*

1996, 1997, 2000 *The five minute back exam*
2001, 2002, 2003
2004, 2005

1999, 0, 03, 04, *Workshop on Anatomy & Kinesiology of the upper extremity*
2005, 11, 12

2008, 10, 12 *Workshop on Anatomy & Kinesiology of the Shoulder*

AMERICAN SPINAL INJURY ASSOCIATION:

- 1989 *A simple method for evaluation of neuromuscular fatigue in normal and quadriplegic subjects*
- 1990 *Rapid closed reduction of traumatic cervical spine dislocation using traction weights up to 120 pounds*
- Recovery of strength in motor complete and motor incomplete cervical spinal cord injured subjects*
- Decline of electrically evoked force of contraction as a predictor of delayed recovery of the extensor carpi radialis muscles in acute traumatic quadriplegic subjects*
- A unique spinal cord injury syndrome: motor sparing in the absence of all sensation*
- 125 I fibrinogen scanning as early indicator of heterotopic ossification in acute spinal cord injured patients*
- The natural history of deep vein thrombosis in acute spinal cord injury*
- 1991 *Recovery of the extensor carpi radialis muscle as predicted by root specific somatosensory evoked potentials in motor complete quadriplegia*
- Recovery of motor strength as predicted by motor and sensory preservation in the zone of partial preservation in quadriplegia subjects*
- Quadriceps recovery in Frankel C spinal cord injury*
- Recovery of zero-grade muscles in the zone of partial preservation in motor complete quadriplegia*
- Prognosis for ambulation and motor recovery in motor complete lower motor neuron (LMN) spinal cord injury*
- 1992 *Spinal cord injury: prognosis for ambulation based on recovery of quadriceps function*
- Daily self-care in quadriplegic subjects: triceps strength as a predictor*
- Motor recovery in the zone of partial preservation in motor complete quadriplegia: dominant versus non-dominant side*
- 1993 *Indispensability of the Voluntary and Electrically induced muscle testing in clinical electrodiagnosis.*
- Extensor carpi radialis recovers sooner than biceps after cervical spinal cord injuries*
- 1994 *Superiority of the use of a force transducer to the MMT in quantifying changes in strength post-SCI.*

Functional independence as a measure of wrist strength measured by myometry.

Correlation of bladder function after spinal cord injury with initial perianal pinprick testing.

Functional overload of partially denervated muscles.

Motor power differences between 1, 2, and 3 month intervals post-SCI in cervical spinal cord injured patients.

1995 *Use of shoulder flexors to achieve isometric elbow extension in C6 tetraplegics during weight shift.*

VISITING PROFESSORSHIPS/INVITED LECTURES:

- 1970-71 Physiology of Sex
Villanova University and Rosemont College,
Villanova PA Fall-Winter
- 1971 Lectures on the normal and rheumatoid hand, Parkinson's disease, normal, atrophic
 exercised and electrically stimulated muscle
Letterman General Hospital
San Francisco, CA, January 25-27
- 1973 Effect of Electrical Stimulation on Denervated Muscle
University of Washington
Seattle WA, January 18
- 1974 Effect of Electrical Stimulation on Denervated Muscle
Effect of Exercise on Normal Muscle
Tufts University
Boston MA, May 16-17
- 1975 Review of Fiber Types
Exercise in Normal and Atrophic Processes
Kinesiology of the Rheumatoid Hand
Albert Einstein College of Medicine
New York NY, February 25
- A Review of Fiber Types
The Effect of Exercise on Normal Muscle
Tufts University
Boston MA, April 30-May 1
- 1976 Muscle Fiber Types
Tufts University
Boston MA, May 21
- Normal Anatomy and Physiology
The Effect of Exercise on Muscle

Pathology of Muscle
Effects of Exercise on Abnormal Muscle
Effects of Electrical Stimulation
Neurophysiology of the Rheumatoid Hand
Department of Physical Medicine and Rehabilitation
Ohio State University
Columbus, Ohio, October 14-15

1977
EMG Related to Biopsy
Effect of Exercise on Normal Muscle
Tufts University
Boston MA, April 21

1978
The Effect of Crush Denervation on Contractile Properties of Skeletal Muscles
Albert Einstein College of Medicine
Bronx NY, January 10

Low Back Pain
Beebe Hospital
Lewes DE, April 7

Anatomy and Physiology of Muscle
The Effect of Exercise on Muscle
The Rehabilitation Institute of Chicago
Chicago IL, April 8

Exercise Physiology and Energetics
Effect of Exercise on Normal Muscle
Tufts University
Boston MA, April 20

1979
The Normal and Rheumatoid Hand
Effect of Exercise on Normal Muscle
Tufts University
Boston MA, April 18

Muscle Fiber Types and Their Control
American Association of Electromyography and Electrodiagnosis
New Orleans, LA, October 5

The Neural Control of Muscle
Tufts University
Boston MA, December 5

1980
The Effect of Exercise on Normal Muscle
Tufts University
Boston MA, September 18

Effect of Electrical Stimulation on Denervated and Reinnervating Muscle
University of Michigan
Ann Arbor MI, November 21

Muscle Fiber Types and the Effect of Exercise Training
Michigan State Medical Society
Dearborn MI, November 20

1981 Normal, Atrophic, Exercise and Electrically Stimulated Muscle
Letterman General Hospital
San Francisco CA, January 27

Muscle Fiber Typing and its Relation to Exercise
Donald L. Rose Lecture
Department of Rehabilitation Medicine
University of Kansas Medical Center
Kansas City KN, April 6

Mechanics of the Rheumatoid Hand
Electromyography of the Vascularities
The Muscle Mechanics of Rheumatoid Disease
Fiber Types
Normal Muscle, Exercise and Training Programmes
Pathologic Muscle: The Relationship Between Disease and Muscle
Outcome Measurements - A Consideration of the Effect of Exercise and Activity
Programs
Wellesley Hospital, University of Toronto
Toronto ONT, June 18

Mechanisms and Treatment of Back, Neck and Shoulder pain
Reading General Hospital
Reading PA, November 3

1982 Electrodiagnosis
Normal Muscle
Diseased Muscle
Exercise in Normal and Diseased Muscle
Rheumatoid Arthritis
Santo Tomas Hospital
Manila Philippines, January 5-20

Normal Muscle Physiology and Exercise Response in Normal and Neuropathic Muscle
Electromyogram, Rest Potentials and Clinical Electrodiagnostic Evaluation of Peripheral
Neuropathies
University of Texas Health Sciences Center
San Antonio TX, March 11-12

Rehabilitation Research
Rehabilitation of the Rheumatoid Hand

Medical College of Wisconsin
Milwaukee WI, December 1

- 1983 Rehabilitation of a Patient with Peripheral Neuropathy
 Rehabilitation in Chronic Progressive Neuromuscular Disorders
 Traditional Electromyography
 11th Neuromuscular Disease Symposium
 Baylor College of Medicine
 Houston TX, March 10-11-12
- Chronic Exercise Effects on Reinnervating Skeletal Muscle
 American College of Sports Medicine
 Montreal QUE, May 18-21
 Strengthening Exercise in Normal Muscle
 NASA-AMES Research Center
 Palo Alto, CA, November 7
- 1984 Sesquicentennial Visiting Professor
 150th Anniversary Celebration of the College of Medicine of the Ohio State University
 Columbus, OH, April 9-10
- 1985 Physiology and Exercise Response in Normal and Neuropathic Muscle and
 Electrodiagnosis
 University of Texas Health Science Center
 San Antonio TX, February 14-15
- Normal Muscle Physiology and Exercise Response in Normal and Neuropathic Muscle
 Baylor College of Medicine
 Houston TX, June 14
- Strengthening Exercise in Normal Muscle
 NASA - Johnson Space Center
 Houston TX, July 24
- Evaluation and Treatment of Neck and Shoulder pain
 Latrobe Area Hospitals
 Latrobe PA, December 3-4
- 1986 Physiology and Exercise Response in Normal and Neuropathic Muscle and
 Electrodiagnosis
 University of Texas Health Science Center
 San Antonio TX, February 14-15
- Normal and Abnormal Muscle
 Electrodiagnosis
 The Rheumatoid Hand
 Santo Tomas Hospital
 Manila Philippines, February 9-15
- The Physiology of Strengthening Exercises

Needle Electrode Evaluation
The Treatment of Peripheral Neuropathies
The Diagnosis, Prognosis and Treatment of Bell's Palsy
IRMA V '86
Manila Philippines, February 16-21

Weight Lifting
Muscle Physiology, Muscle Typing and Biopsy in Sports Medicine
Symposium on Sports Medicine
Jakarta Indonesia, February 27-28

Normal Muscle Physiology and Exercise Response in Normal and Neuropathic Muscle
Baylor University
Houston TX, June 14

Muscle Atrophy in Rheumatoid Arthritis
Conference on Research in Arthritis and Rehabilitation
Charlottesville VA, July 14-16

Strengthening Exercise in Normal Muscle
NASA - Johnson Space Center
Houston TX, July 24

Post-Polio Syndrome
Lay Post Polio Group Meeting
Hot Springs GA, November 23

The Rheumatoid Hand
Prevention of DVT in SCI
William Beaumont Hospital
Detroit MI, December 3

Evaluation and Treatment of Neck and Shoulder Pain
Latrobe Area Hospitals
Latrobe PA, December 3-4

1987 Assessment of Motor Disability
The University of Tennessee College of Medicine
Chattanooga TN, February 14

Prevention of DVT in SCI
New Jersey Society of Physical Medicine and Rehabilitation
West Orange, NJ, May 13

Rehabilitation in Orthopedics
The Philadelphia Orthopedic Review Course
Philadelphia PA, June 13

1988 Fiber Types
Normal Exercise

Exercise in Peripheral Myopathies and Neuropathies
Prevention of DVTs with Electrical Stimulation
How to Publish, Write and Present Papers
Medical College of Wisconsin
Milwaukee WI, May 5-6

Rehabilitation in Orthopedics
The Philadelphia Orthopedic Review Course
Philadelphia PA, May 22

1989 Spinal Cord Injury Function and Dysfunction
Jefferson Medical College
Philadelphia PA, February 15

SCI Research Update on Neurological and Functional Recovery
Magee Rehabilitation Hospital
Philadelphia PA, September 20

Fibrillations in Acute and Chronic Spinal Cord Injured Patients
Effect of Electromagnetic Stimulation on Terminal Regeneration-Caused Peripheral
Reinnervation of the Rat Soleus
American Association of Electromyography and Electrodiagnosis
Washington DC, September 22

Electrical Stimulation: Potential Application to Exercise Detraining
Intrasubject Variability in Force Production of the Right Quadriceps during Eccentric
Isokinetic Loading at 30 Degrees per Second
Countering Space Adaptation with Exercise: Current Issues
Johnson Space Center, Nassau Bay Hilton
Houston, TX, September 26-28

Neck and Shoulder Pain: Diagnosis and Management
Akron General Medical Center
Akron Ohio, November 29

Principles and Practice of Therapeutic Exercises in Rehabilitation Medicine
Edwin Shaw Hospital
Akron, Ohio, November 29

Functional Anatomy: Trunk, Hip and Knee
Inter University Lower Extremity Orthotics Course
Moss Rehabilitation Hospital and Albert Einstein Medical Center
Philadelphia PA, December 14

1990 Use of Electrodiagnosis in Evaluation of Patients with Diseases of the Peripheral Nervous
System
Practical Electrodiagnostic Seminar
University of Texas Health Science Center
San Antonio TX, February 23-24

Useful Clinical Applications of Magnetic Coil Stimulation
Eastern Association of Electroencephalographers
Auberge Mont Gabriel QUE, March 1-4

Kinesiologic Evaluation of the Upper Extremity
John F. Kennedy Medical Center
Edison NJ, March 9-10

Clinical use of Electrical Stimulation of Denervated and Normal Muscle
Muscle Contractility: Twitch vs. Tetanus
Exercise Therapy of Partially Denervated Muscle How to Write a Journal Article
University of Medicine & Dentistry of New Jersey
New Brunswick NJ, March 22-23

Getting your Research Published
American Occupational Therapy Association
70th Annual Conference and Exposition
New Orleans LA, April 30.

Functional Anatomy: Trunk, Hip and Knee
Inter-University Lower Extremity Orthotics Course
Moss Rehabilitation Hospital and Albert Einstein Medical Center
Philadelphia PA, December 14

1991 Spontaneous Potentials; Generation of MUAPs; Anomalous Innervation
Practical Electrodiagnosis Seminar
University of Texas Health Science Center
San Antonio TX, February 21-23

Evaluation of Shoulder; Evaluation and Treatment of Rheumatoid Hand
New England Society of Physical Medicine and Rehabilitation
Evening Lecture Series
New England Rehabilitation Hospital
Woburn MA, March 11

Research Advances: Multidisciplinary Approach to Spinal Cord Injury Patients
Continuing Education Courses for Nurses
Jefferson Medical College of Thomas Jefferson University
Philadelphia PA, March 12

Spontaneous Potentials
Neuropathic EMG
Case Presentations
Demonstration of EMG
Department of Rehabilitation Medicine
University of Kentucky
Louisville, KY, November 7-8

1992 Electrical Stimulation after Nerve Injury
Department of Rehabilitation Medicine

University of Pennsylvania
Philadelphia PA, February 4

Recovery of Motor Power at the Zone of Partial Preservation
McMaster University
Hamilton ONT, May 5

Research in Physical Medicine and Rehabilitation
Louisiana State University
New Orleans LA, May 29

1993

Motor Unit Potentials
Spontaneous Potentials
Neuropathic Needle EMG
University of Texas Health Science Center
San Antonio TX, February 18, 19

Waveform Identification
Interpretation and reporting of the EDX evaluation
Panel discussion
16 annual electromyography and clinical neurophysiology:
A high intensity review
The Rehabilitation Institute of Chicago
Chicago IL, March 1-4

EDX in Differentiating Acute From Chronic Nerve Root Damage
Orthopedic Grand Rounds
Jefferson Medical College of Thomas Jefferson University
Philadelphia PA, March 25

Needle Electromyography
Repetitive Stimulation
Chicago AAEM Workshop
Chicago IL, March 5,6

Kinesiologic Evaluation of the Upper Extremity
Clinical use of Electrical Stimulation
Rush Presbyterian Medical Center
Chicago IL, April 15

Bernard Maas Lecture:
Functional Overload of Partially
Denervated Muscle
Sinai Health Center
Detroit, MI, June 16, 17

Case Western Reserve Medical School

Functional Overload of Partially Denervated Muscle
Cleveland, OH, July 21
Examination of the Upper Extremity
July 22

Post-Polio Group, Abington Hospital
Post-Polio Syndrome
Abington, PA, September 12

Functional Overload
Magee Rehabilitation Hospital
Philadelphia, PA, September 23

1994 Radiculopathies: Update in Clinical Neurophysiology. Department of
Neurology, Jefferson Medical College, February 25

Waveform Identification
Interpretation and Reporting of the EDX Evaluation
Panel discussion
17th Annual Electromyography and Clinical Neurophysiology:
A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 4-6

Upper and Lower Extremity Radiculopathies
Southern Medical Association
New Orleans, LA, March 24-25

Waveform Identification
Uselessness of Proximal Conduction
Voluntary and Electrically Induced Muscle Testing
Peroneal neuropathy in the newborn
Medical College of Wisconsin, Milwaukee, WI, June 2, 1994

For SCI: Effect of Electrical Stimulation on Recovery of Strength
After Nerve Injuries
Needle Exam of Commonly Tested Muscles in Clinical EMG
Management of the Rheumatoid Hand
Rehabilitation Institute of Michigan, Detroit, MI, October 27, 1994

Uselessness of Proximal Nerve Conduction
Philadelphia Society of Physical Medicine & Rehabilitation,
Philadelphia, PA, November 30, 1994

1995 Waveform Identification
Basic and Unusual Conduction Studies

18th Annual Electromyography and Clinical Neurophysiology:
A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 2-3

Visiting Professorship
Charlotte Institute of Rehabilitation
Diagnosis of neuropathies
The Hand: What makes it work
Charlotte, NC, October 13

1996

Waveform Identification
H Reflex, F Wave and Cranial Nerve Conduction
19th Annual Electromyography and Clinical Neurophysiology:
A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 13-17

Waveform
General Approach to Radiculopathies
Upper and Lower Extremity Radiculopathies
Median Nerve Neuropathies
University of Texas Health Science Center
San Antonio TX, March 28-30

Waveform Analysis
Anomalous Innervation
EMG Changes with Denervation
The University of Pittsburgh School of Medicine
April 11-12

Licht Visiting Professorship
Ohio State University
May 3

1997

Overuse after Partial Denervation
Medical College of Ohio, January 19

Waveform Identification
H Reflex, F Wave and Cranial Nerve Conduction
20th Annual Electromyography and Clinical Neurophysiology:
A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 5-9

Exercise after Partial Denervation
Uselessness of Proximal Conduction
Eastern Virginia Medical School
June 20

- 1998
Waveform Identification
H Reflex, F Wave and Cranial Nerve Conduction
21st Annual Electromyography and Clinical Neurophysiology:
A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 4-7
- 1999
Waveform Identification
H Reflex, F Wave and Cranial Nerve Conduction
22nd Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 10-13
- Functional Overload Related to Post Polio and Similar Conditions
16th Annual James Rae Lecture
Department of Physical Medicine and Rehabilitation
University of Michigan
Ann Arbor MI, April 23
- Iatrogenic Neuropathies
Jefferson Medical College
Department of Oral Surgery Grand Rounds
April 7
- Iatrogenic Neuropathies
Jefferson Medical College
Department of Surgery, Morbidity & Mortality
April 15
- Post Polio Syndrome
Jefferson Medical College
Department of Neurology
April 19
- Iatrogenic Neuropathies
Jefferson Medical College
Department of Urology Grand Rounds
April 29
- Iatrogenic Neuropathies
Jefferson Medical College
Department of Anesthesiology
May 27
- 2000
Waveform identification
H Reflex, F Wave and Cranial Nerve Conduction
Interpretation of Proximal Conduction
23rd Annual Electromyography and Clinical Neurophysiology: A High Intensity Review

The Rehabilitation Institute of Chicago
Chicago IL, March 15-18

Waveform Identification
10th Annual Electromyography Course
University of Pittsburgh Medical Center
Pittsburgh PA, March 23-24

Anatomy and Kinesiology of the Upper Extremity
Treatment of Neuropathy
Waveform Identification
Rusk Rehabilitation Center
University of Missouri - Columbia
Columbia MO, May 6

Anatomy and Kinesiology of the Shoulder
Treatment of Neuropathy
Louisiana State University
New Orleans LA, June 6

2001 Waveform Identification
H Reflex, F Wave and Cranial Nerve Conduction
Interpretation of Proximal Conduction
24th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago; Chicago IL, March 14-17

Functional Anatomy of the Upper Extremity
Schwab Rehabilitation Hospital
Chicago, IL, March 15

Upper Extremity Anatomy with EMG Correlation
2001 Resident Physician Council: Eastern Regional Conference
American Academy of Physical Medicine and Rehabilitation
Albert Einstein Medical Center
Philadelphia, PA, June 9

2002 Waveform Identification
Five Minute Back Exam
Visiting Professorship
Charlotte Institute of Rehabilitation
Charlotte, NC, September 5,6

2002 Waveform Identification
Five Minute Back Exam
Anatomy of the Upper extremity
Visiting Professorship
Nova Scotia Rehabilitation Center
Nova Scotia, Canada, October 22

2003 Waveform Identification

26th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 12-15

- 2003
The Five Minute Back Exam
Upper Extremity Neurological Exam
Interpretation of Proximal Conduction
Metro Health Medical Center
Cleveland. OH, May 29
- 2004
Waveform Identification
H Reflex, F Wave and Cranial Nerve Conduction
Interpretation of Proximal Conduction
27th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 17-20
- 2004
Ulnar Neuropathies
Anatomy & Kinesiology of the Upper Extremity
Gait Analysis
The Rheumatoid Hand
Charlotte Institute of Rehabilitation Medicine
Charlotte, NC, April 29-30
- 2005
Waveform Identification
28th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 9 – 12
- 2006
Waveform Identification
29th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 8-11
- 2006
Grand Rounds
The Rehabilitation Institute of Chicago
Chicago IL, March 8
- 2007
Waveform Identification
30th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 14-17
- 2007
Ulnar neuropathies
Pennsylvania Academy of Physical Medicine and rehabilitation
Magee Rehabilitation Hospital. June 8, 2007
- 2007
Gait abnormalities in neurological diseases

Department of Neurology
Cleveland Clinic Foundation
Cleveland Ohio November 5, 2007

- 2007 The manual muscle test of the upper and lower limbs
Department of Neurology
Cleveland Clinic Foundation
Cleveland Ohio November 5, 2007
- 2008 The manual muscle test of the upper limb
The 5 minute back examination
JFK Johnson Rehabilitation Institute
Edison New Jersey April 11, 2008
- 2008 Waveform Identification
31th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 14-17
- 2008 The manual muscle test of the upper limb
Gait Dysfunction: Grand Rounds
Department of Neurology
Pennsylvania College of Medicine
Hershey, Pennsylvania, May 29, 2009
- 2009 Waveform Identification
32th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 12-15
- 2009 Gait Dysfunction: Grand Rounds
Department of Neurology
Jefferson Medical College
Aug. 31 2009
- 2010 Gait Dysfunction
The manual muscle test of the upper limb
Michigan State University
East Lansing, MN, January 17, 18
- Waveform Identification
31th Annual Electromyography and Clinical Neurophysiology: A High Intensity Review
The Rehabilitation Institute of Chicago
Chicago IL, March 14-17
- Gait Dysfunction
The 5 minute back examination
The manual muscle test of the upper limb

JFK Johnson Rehabilitation Institute
Edison New Jersey April 20

2011 Anatomy & Kinesiology of the Shoulder
Gait Analysis
Charlotte Institute of Rehabilitation Medicine
Charlotte, NC, April 8

Focused Examination of the Cervical Spine Patient
2nd Annual Navigating Spinal Care Symposium
Cervical Spine Symposium
Philadelphia, PA, May 6

2012 Anatomy & Kinesiology of the Shoulder
Gait Analysis
Johns Hopkins University
Baltimore, MD, January 24

Myelinopathies: How Do Conduction Studies Diagnose and Explain Symptoms/Signs
Gait in Lower Motor Neuron Disease
University of Pittsburgh
Pittsburg, PA, March 30

Patient and Psychiatrist Perspective on Chronic Disease.
American Osteopathic College of Physical Medicine and Rehabilitation
Four Seasons Hotel in Philadelphia, PA.
Philadelphia, PA, April 19

The manual muscle test of the upper limb
Myelinopathies
JFK Johnson Rehabilitation Institute
Edison New Jersey, May 25

TEACHING ACTIVITIES:

RESIDENT EDUCATION

1. Electrodiagnostic medicine didactic sessions with the residents from 7:00 to 8:00 a.m., two to three days per week throughout the year, 1970-present.
2. Clinical rounds from 3:00 to 4:30 p.m. 12 months throughout the year, Monday-Friday, 1970-1998.
3. Resident education during office practice two days per week, 1970-1998.
4. Lectures on waveform analysis and the neuropathic EMG at the Annual Course in Electrodiagnosis and Clinical Physiology, 1974 to the present.
5. Lecture on neuromuscular junction physiology yearly 1991-1994.
6. Exam of hip and knee at annual orthotic course 1994.
7. Six to 8 upper & lower extremity anatomy/clinical correlation lectures (3 hours each) 1998-present.

8. Manual muscle test and sensory and reflex examination training sessions to the TJUH orthopedic residents Thursday afternoons for 26 weeks per year. 2001 to 2011
9. Annual review of American Association of Neuromuscular and Electrodiagnostic Medicine SAE Examination 3 to 4 hours per year, 2000 to present

MEDICAL STUDENT EDUCATION

1. Clinical correlation lecture to the freshman medical students on electrodiagnosis. Now called Freshman Neuroscience ID 150 from 1985 to 2011
2. Clinical correlation lecture to the freshman medical students on gait, 1971-1985.
3. Introduction to Clinical Medicine lecture on *Exercise* given yearly, 1971-1990.
4. Mentor for two to four medical students per year devoted to research and publication (see list of publication numbers 53, 54, 61-65, 67, 69, 70, 73-79).
5. Clinical rounds from 8:00 to 10:00 a.m. nine months throughout the year, Monday-Friday, 1970-1998.
6. Teach upper extremity gross anatomy to first year medical students (6 lectures and 6 labs). 1997 - 1999
7. Physical Diagnosis, second year students, every other Monday, January-April, 1999-2001.
8. Physical Diagnosis of the Peripheral Nervous system including the manual muscle test and sensory and Reflex examination to third or fourth year students 2000 - 2012

ALLIED HEALTH PROFESSIONAL EDUCATION

One lecture per year to the Occupational Therapy class on management of inflammatory conditions of the upper extremity, 1980-1994.

Three lectures repeated 4 times per year on brain and spinal cord disease. Lankenau Nursing School From 1971 to about 1977. Chosen to give commencement address 1977.

CLINICAL DUTIES:

1. Provide rehabilitation services to inpatients: daily morning rounds 8-10am, 1970-1998.
2. Provide electrodiagnosis testing: two days per week, 1970-present.
3. Provide rehabilitation services to outpatients: two half days per week, 1970-1998.

RESEARCH ACTIVITIES:

1. Serve as a mentor for the attending staff of the Department of Rehabilitation Medicine.
2. Serve as a mentor for the residents in the Department of Rehabilitation Medicine.
3. Serve as a mentor to the medical students who perform research in the Department of Rehabilitation Medicine.

ADMINISTRATIVE ACTIVITIES:

American Board of Physical Medicine and Rehabilitation
Associate Examination Writer

1984-1989

Chairman: Annual Course in Electrodiagnosis
Sponsored by the Department of Rehabilitation Medicine and
Jefferson Medical College of Thomas Jefferson University
in cooperation with the Section of Physical Medicine and
Rehabilitation of the Philadelphia County Medical Society
Philadelphia PA

1974-1993 & 2007-2012

INTRAMURAL COMMITTEE APPOINTMENTS:

Admissions Committee; Jefferson Medical College:

Member	1982-1998
Research Committee; Jefferson Medical College: Member	1991-1995
Jefferson Medical College Advisor Advisor for 2-4 medical students per year. See list of publications	1970-2000
Ethics Committee; Thomas Jefferson University Hospital Member	1990-2008

RESEARCH GRANTS:

January- December 1973:

Easter Seal Foundation, Grant #N-7214, Effect of Exercise on Reinnervating Muscle in Experimental Neuropathy. \$10,000

January-December 1974:

Easter Seal Foundation, Grant #N7323, Effect of Graded Exercise in Children with Spina Bifida. \$10,000

June 1, 1975 - May 31, 1978:

NIH-National Institute of Neurological Disease and Stroke, Grant #1, RO1 NS 11656-01A1 AFY, Reinnervating Muscle in Activity and Inactivity. 1975 - \$31,417; 1976 - \$32,970; 1977 - \$34,608.

July 1, 1978 - June 30, 1979:

Muscular Dystrophy Association, Effect of Electrical Stimulation on Muscle Reinnervation. \$19,602

July 1, 1979 - June 30 1980:

Muscular Dystrophy Association, Effect of Electrical Stimulation on Muscle Reinnervation. \$19,602

July 1, 1985 - June 30, 1987:

National Aeronautics & Space Administration, Washington, DC., Maintenance of Muscle Strength in Astronauts. \$76,853

June 1, 1983 - May 1, 1986:

3M Company, Minneapolis, MN, Comparison of Low Dose Heparin Plus Dihydroergotamine and Low Dose Heparin and Electrical Stimulation as Prophylaxis for Deep Vein Thrombosis in Acute Spinal Cord Injury. \$134,000

September 1, 1984 - August 31, 1989:

National Institute of Handicapped Research, Washington, DC, Functional Recovery of Wrist Extensors after Quadriplegia. \$121,780

July 1985 - September 1990:

National Aeronautics and Space Administration, Washington, DC, Maintenance of Muscle Strength in Human Crew Members During Space Flight. \$40,000

1987 - 1990:

3M Company, Minneapolis, MN, and Sandoz Research Institute, East Hanover, NJ, Prophylaxis for Deep Vein Thrombosis in Motor Complete and Motor Non-Functional Acute Spinal Cord Injury

August 1987 - July 1989:

Medtronic Inc., Minneapolis, MN, Spinal Cord Stimulation for the Management of Spasm and Spasticity in Spinal Cord Injury. \$238,995.46

March 1, 1988 - February 28, 1993:

National Institute for Disability Research and Rehabilitation, Grant #H133B80017, Neural Recovery and Functional Enhancement. \$1,425,000

PUBLICATIONS AND PAPERS IN PRESS:

1. Alexander J, *Herbison GJ*. Prosthetic rehabilitation of a patient with bilateral hip flexion contractions: report of a case. *Arch Phys Med Rehabil* 1965;46:708-11.
2. *Herbison GJ*. The elderly patient with a peripheral neuropathy. *Geriatrics* 1970;25(3); 108-24.
3. *Herbison GJ*, Rajashekhar TP, Tyson R. Total-contact plaster pylons in management of open stumps. *Arch Phys Med Rehabil* 1971;52:276-9.
4. *Herbison GJ*, Teng C, Reyes T, Reyes O. Effect of electrical stimulation on denervated muscle of rat. *Arch Phys Med Rehabil* 1971;52:516-22.
5. *Herbison GJ*. H-reflex in patients with Parkinsonism: Effect of leva dopa. *Arch Phys Med Rehabil* 1973;54:291-5.
6. *Herbison GJ*, Teng C, Gordon EE. Electrical stimulation of reinnervating rat muscle. *Arch Phys Med Rehabil* 1973;54:156-60.
7. *Herbison GJ*, Teng C, Martin JH, Ditunno JF. Carpal tunnel syndrome in rheumatoid arthritis. *Am J Phys Med* 1973;52:68-74.
8. *Herbison GJ*, Gordon EE. Exercise on normal muscle: Biochemical effects. *Arch Phys Med Rehabil* 1973;54:409-15.
9. *Herbison GJ*, Jaweed MM, Ditunno JF. Reinnervating muscle in rats: the effect of overwork. *Arch Phys Med Rehabil* 1973;54:511-4.
10. *Herbison GJ*, Jaweed MM, Ditunno JF, Scott CM. Effect of overwork during reinnervation of rat muscle. *Exp Neurol* 1973;41:1-14.
11. *Herbison GJ*, Jaweed MM, Gordon EE, Ditunno JF. Overwork of denervated skeletal muscle: Effect on muscle in rats. *Arch Phys Med Rehabil* 1974;55:202-5.
12. *Herbison GJ*, Jaweed MM, Ditunno JF. Effect of swimming on reinnervation of rat skeletal muscle. *J Neurol Neurosurg Psychiat* 1974;37:1247-51.
13. *Herbison GJ*, Jaweed MM, Scott CM, Ditunno JF. Muscle weight and protein content of rat skeletal muscle following sciatic nerve crush. *Arch Phys Med Rehabil* 1974;55:241-6.
14. Jaweed MM, *Herbison GJ*, Ditunno JF. Effect of swimming on compensatory hypertrophy of reinnervating soleus and plantaris muscles. *Am J Phys Med* 1974;53: 35-40.

15. Jaweed MM, *Herbison GJ*, Ditunno JF Gordon EE. Heart weight of rat in different exercises. Arch Phys Med Rehabil 1974;55:539-44.
16. Jaweed MM, *Herbison GJ*, Ditunno JF. Endurance and strengthening exercise adaptations: I. Protein changes in skeletal muscles. Arch Phys Med Rehabil 1974;55:513-9.
17. Jaweed MM, *Herbison GJ* Gordon EE. Histochemical response of rat phosphorylase to different workloads after tenotomy of the synergists. Arch Phys Med Rehabil 1974;55:198-201.
18. Rajashekar TP, *Herbison GJ*. Lumbosacral plexopathy caused by retroperitoneal hemorrhage: Report of two cases. Arch Phys Med Rehabil 1974;55:91-3.
19. Jaweed MM, *Herbison GJ*, Ditunno JF. Denervation and reinnervation of fast and slow muscles: A histochemical study in rats. J Histochem Cytochem 1975;28:808-27.
20. *Herbison GJ*, Jaweed MM, Ditunno JF. Synergistic tenotomy: Effect on chronically denervated slow and fast muscles of rat. Arch Phys Med Rehabil 1975;56:483-7.
21. Botvin JG, Ditunno JF, *Herbison GJ*. Early mobilization of a patient with progressive neuromuscular disease and lower extremity fractures. Arch Phys Med Rehabil 1975;56:317-9.
22. Miller LS, Staas WE, *Herbison GJ*. Abdominal problems in patients with spinal cord lesions. Arch Phys Med Rehabil 1975;56:405-8.
23. Jaweed MM, *Herbison GJ*, Ditunno JF. Myosin ATPase activity after strengthening exercise. J Anat 1977 Anat 124:371-81.
24. *Herbison GJ*, Jaweed MM, Ditunno JF. Muscle fiber atrophy after cast immobilization in the rat. Arch Phys Med Rehabil 1978;59:301-5.
25. *Herbison GJ*, Jaweed MM, Ditunno JF. Muscle atrophy following denervation, casting, inflammation and tenotomy. Arch Phys Med Rehabil 1979;60:401-4.
26. *Herbison GJ*, Jaweed MM, Ditunno JF. Histochemical fiber type alterations secondary to exercise training of reinnervating adult rat muscle. Arch Phys Med Rehabil 1980;61:255-7.
27. Jaweed MM, *Herbison GJ*, Ditunno JF. Contractile properties of rat soleus after different types of weight lifting. International J of Sports Med 1980;1:181-4.
28. *Herbison GJ*, Jaweed MM, Ditunno JF. Effect of activity and inactivity of reinnervating rat skeletal muscle contractility. Exp Neurol 1980;70:498-506.
29. *Herbison GJ*, Jaweed MM, Ditunno JF. Response of Type I fibers to weight lifting in rat plantaris. Arch Phys Med Rehabil 1981;62:342-4.
30. *Herbison GJ*, Jaweed MM, Ditunno JF. Contractile properties of reinnervating skeletal muscle in the rat. Arch Phys Med Rehabil 1981;62:35-9.
31. Jaweed MM, Alam I, *Herbison GJ*, Ditunno JF. Prostaglandins in denervated skeletal muscle of the rat: Effect of direct electrical stimulation. Neuroscience 1981;6:2787-92.

32. *Herbison GJ, Jaweed MM, Ditunno JF.* Reinnervating rat skeletal muscle: Effect of 35% grade treadmill exercise. *Arch Phys Med Rehabil* 1982;63:313-6.
33. *Jaweed MM, Herbison GJ, Ditunno JF.* Physical activity and inactivity influences on C-leucine incorporation in reinnervated rat gastrocnemius. *Arch Phys Med Rehabil* 1982;63:28-31.
34. *Jaweed MM, Herbison GJ, Ditunno JF.* Direct electrical stimulation of rat soleus during denervation-reinnervation. *Exp Neurol* 1982;75:589-99.
35. *Herbison GJ, Jaweed MM, Ditunno JF.* Muscle fiber types. *Arch Phys Med Rehabil* 1982;63:227-30.
36. *Jaweed MM, Alam I, Herbison GJ, Ditunno JF.* Changes in thromboxane B2 and 6-Keto-PGF1 after direct electrical stimulation of the denervated rat gastrocnemius. *Prostaglandins Leukotrienes Medicine* 1982;9:205-10.
37. *Herbison GJ, Jaweed MM, Ditunno JF.* Acetylcholine sensitivity and fibrillation potentials in electrically stimulated crush denervated rat skeletal muscle. *Arch Phys Med Rehabil* 1983;64:217-20.
38. *Herbison GJ, Jaweed MM, Ditunno JF.* Exercise therapies in peripheral neuropathies. *Arch Phys Med Rehabil* 1983;64:201-5.
39. *Jaweed MM, Herbison GJ, Miller EE, Ditunno JF.* Compensatory hypertrophy of the soleus in tumor-bearing rats. *J Neuro Sciences* 1983;61:171-9.
40. *Herbison GJ, Jaweed MM, Ditunno JF.* Recovery of rat muscle after cast immobilization. *Exp Neurol* 1984;85:239-48.
41. *Herbison GJ.* Research: Ends, setting, environment, activities, resources, creativity, health. *Arch Phys Med Rehabil* 1984;65:112-4.
42. *Jaweed MM, Alleva F, Herbison GJ, Ditunno JF, Balasz T.* Muscle atrophy and histopathology in 6-mercaptopurine treated rats. *Exp Mol Pathol* 1985;43:78-81.
43. *Kinney CL, Jaweed MM, Herbison GJ, Ditunno JF.* Effect of overwork on partially denervated rat soleus muscle. *Arch Phys Med Rehabil* 1986;67:286-9.
44. *Herbison GJ, Jaweed MM, Ditunno JF.* Electrical stimulation of the sciatic nerve of rats after partial denervation of the soleus muscle. *Arch Phys Med Rehabil* 1986;67: 79-83.
45. *Jaweed MM, Bianchi CP, Herbison GJ, Ditunno JF.* Capillary fiber ratio and electrolyte content of compensatory hypertrophied rat soleus. *J. Neurol Sci* 1986;75: 195-203.
46. *Ditunno JF, Sipski ML, Posuniak EA, Chen YT, Staas WE, Herbison GJ.* Recovery of wrist extensors in traumatic quadriplegia. *Arch Phys Med Rehabil* 1987;68:287-90.
47. *Ball RD, Herbison GJ.* Anatomy and physiology of nerve and muscle. *Arch Phys Med Rehabil* 1987;S68:34-9.

48. *Herbison GJ, Ditunno JF, Jaweed MM.* Muscle atrophy in rheumatoid arthritis. *J Rheumatol* 1987;(Supp.15)14:80-3.
49. Volosin KJ, Dworkin G, Greenberg RM, *Herbison GJ*, Greenspan AJ. Use of external muscle stimulation in a patient with a Unipolar DDD Pacemaker. *Pace* 1987;10:958.
50. Jaweed MM, *Herbison GJ*, Ditunno JF. Overwork induced axonal hypertrophy in soleus nerves of the rat. *Arch Phys Med Rehabil* 1987;68:706-9.
51. Merli GJ, *Herbison GJ*, Weitz HH, Ditunno JF, Henges JH, Park CH, Jaweed MM, Heltzer J. Prophylaxis for deep vein thrombosis in motor complete and motor non-functional acute spinal cord injury. *Arch Phys Med Rehabil* 1988;69:661-4.
52. Schwartz GS, *Herbison GJ*. Disseminated fat necrosis: A rehabilitation challenge. *Arch Phys Med Rehabil* 1989;70:404-7.
53. Mange KC, Ditunno JF, *Herbison GJ*, Jaweed MM. Recovery of strength at the zone of injury in motor complete and motor incomplete cervical spinal cord injured patients. *Arch Phys Med Rehabil* 1990;71:562-5.
54. Campbell JW, *Herbison GJ*, Chen YT, Jaweed MM, Gussner CG. Spontaneous electromyographic potentials in chronic spinal cord injured patients: Relation to spasticity and length of nerve. *Arch Phys Med Rehabil* 1991;72:23-7.
55. Crozier KS, Graziani V, Ditunno JF, *Herbison GJ*. Spinal cord injury: prognosis for ambulation based on sensory examination in patients who are initially motor complete. *Arch Phys Med Rehabil* 1991;72:119-21.
56. Booth KR, Streletz LJ, Raab VE, Kerrigan JJ, Alaimo MA, *Herbison GJ*. Motor evoked potentials and central motor conduction: studies of transcranial magnetic stimulation with recording from the leg. *Electroenceph Clin Neurophysiol* 1991;81: 57-62.
57. Brown PJ, Marino RJ, *Herbison GJ*, Ditunno JF. The 72-hour exam on a predictor of recovery in motor complete quadriplegia. *Arch Phys Med Rehabil* 1991;72:546-8.
58. Nemunaitis G, *Herbison GJ*. Cosmetic, functional, independent: self-help aids. *Arch Phys Med Rehabil* 1991;72:334-5.
59. Kowalske KJ, *Herbison GJ*, Ditunno JF, Graziani V. Spinal cord injury syndrome with motor sparing in the absence of all sensation. *Arch Phys Med Rehabil* 1991;72: 932-4.
60. Munin MC, Jaweed MM, Staas WE, Satinsky A, Gutierrez G, *Herbison GJ*. Evaluation of post-polio myelitis muscle weakness by computerized dynamometry in the quadriceps of post-polio subjects. *Arch Phys Med Rehabil* 1991;72:729-33.
61. Zafonte RD, Demangone DA, *Herbison GJ*, Ditunno JF. Daily self care in quadriplegic subjects. *J Neurol Rehabil* 1991; 1: 17-24.
62. Wu L, Marino RJ, *Herbison GJ*, Ditunno JF. Recovery of zero-grade muscles in the zone of partial preservation in motor complete quadriplegia. *Arch Phys Med Rehabil* 1991;73:40-3.

63. Mange KC, Marino RJ, Gregory PC, *Herbison GJ*, Ditunno JF. Course of motor recovery in the zone of partial preservation in spinal cord injury. *Arch Phys Med Rehabil* 1992;73:437-41.
64. Eschbach KS, *Herbison GJ*, Ditunno JF, Sensory root level recovery in Frankel A quadriplegia. *Arch Phys Med Rehabil* 1992;73:618-22.
65. Pillai JJ, Streletz LJ, Field HH, *Herbison G*. Motor evoked potentials in psychogenic paralysis. *Neurol* 1992;42:935-6.
66. Jacobs SR, Sarlo FB, Baran EM, *Herbison GJ*, Ditunno JF. Extensor carpi radialis recovery predicted by qualitative SEP and clinical examination in quadriplegia. *Arch Phys Med Rehabil* 1992;73:790-3.
67. Merli GJ, Crabbe S, Doyle L, Ditunno JF, *Herbison GJ*. Mechanical plus pharmacological prophylaxis for deep vein thrombosis in acute spinal cord injury. *J Am Paraplegia Soc* 1992;30:558-62.
68. Schwartz S, Cohen ME, *Herbison GJ*, Shah A. Relationship between two measures of upper extremity strength: manual muscle test compared to hand-held myometry. *Arch Phys Med Rehabil* 1992;73:1063-8.
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