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Rehabilitation R&D Progress
Research and Development. This issue represents the Winter JRRD, 28(1). The mailing list is intended to cover all professionals in the rehabilitation field who are either actively involved in research, contemplate such involvement, or need to remain familiar with the direction and methods of the current research and the clinical application of its results.

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There are two methods for access the electronic version of these Progress Reports. The first is to click on the bookmark in the left panel to go directly to the subject matter. The second is to scroll down the list and click on the subject matter that is within the box.

Rehabilitation R&D Progress Reports 1990

Contents

1 Section I. PROJECT PROGRESS REPORTS

Progress reports are arranged in appropriate subject categories. Reports are numbered in brackets preceding the title and are cross-referenced by this number in other categories related to their topic. VA-sponsored reports are presented first and are followed by those of other sponsoring organizations in alphabetical order. (See next page for a topical listing with page numbers.)

491 Section II. SPONSOR INDEX WITH SELECTED PROGRAM SUMMMARIES

A. Department of Veterans Affairs

B. Non-VA Sponsoring Organizations

This section contains the name and location of all sponsoring organizations and an index of the titles and page numbers of the projects sponsored by each. Program summaries are presented for organizations providing this information.

513 Section III. SUBJECT INDEX

This index allows readers to identify and locate areas of interest within the full text of the progress reports. Key words are taken from each progress report, organized in the index, and listed with corresponding page numbers.

528 Section IV. AUTHOR INDEX

The names of all progress report investigators and directors of sponsoring organizations are listed with corresponding page numbers.

536 CompuServe. Information on submitting Progress Reports electronically.

ELECTRONIC PRODUCTION

The progress reports in this publication were organized with a multiuser database. The database manager was VA Fileman, running under Micronetics Multiuser Mumps (MSM) on a Dell PC AT. The database was used to compile the reports and to produce the table of contents, sponsor index, subject index, and author index. The database was also used to cross-reference progress reports. Voluntary technical support for the database operation was provided by John Bowman.

Section I Project Progress Reports

I. Amputations and Limb Prostheses

A. General

- 1 Mechanism-Based Treatments for Phantom Limb Pain
- 2 Feasibility of Green/Red/IR PPG in Assessing Ischemic Tissue Survival: A Pilot Study
- 2 Intraoperative Assessment of Amputation and Decubitus Flap Perfusion
- 3 A Program for Evaluating the Dysvascular Patient
- 4 Cosmetic Covers for Upper and Lower Extremity Prostheses
- 5 Laser Doppler Evaluation of Skin Blood Flow
- 5 Computerized Methods for Prosthetics and Orthotics
- 6 Prosthetic/Orthotic Materials
- 7 Information and Education Resource Unit
- 8 Extended Physiological Proprioception in the Control of Prosthetic and Robotic Systems for Physically Disabled Persons

B. Upper Limb

1. General

- 9 Computer-Based Myoelectric Training
- 9 Multifunctional Hand Prosthesis Based on a New Pattern of Prehension
- 10 Myoelectric Signal Characterization in Amputees
- 11 Objective Assessment of User Interface Control Strategies for Proportionally Controlled Prostheses and Orthoses
- 12 Improved Actuation of Body-Powered Prostheses
- 13 Functional Biomechanical Characterization and Functional Design Specification: Upper-Extremity Prosthetics
- 14 Control Strategies for Artificial Limbs
- 14 VLSI Telemetry Implant for Myoelectric Control

B. Upper Limb

2. Above-Elbow

- Implementation of Extended Physiological Proprioception for Prosthesis Control
- 15 Improvement of Body-Powered Upper-Extremity Prosthetic Components: A Modular Electromechanical Lock Actuator—A Positive-Locking Shoulder
- 16 Development of Advanced Body-Powered Prosthetic Arms
- 17 Extended Physiological Proprioception (EPP): An Electronic Cable-Actuated Position-Servo Controller for Upper-Limb Powered Prostheses
- 18 Quantification of Tool Use by Amputees
- 20 Elbow Disarticulation Prosthesis

B. Upper Limb

3. Below-Elbow

- 20 Powered Prosthetic Fingers
- 21 A Myoelectrically-Controlled, Pneumatically-Powered Hand Prosthesis for Children
- 21 Below-Elbow Prosthetic System
- 22 Evaluation of Arm Prostheses for Children with Forearm Defect by Observations in Daily Life
- 23 Development of a Child-Size Powered Wrist

C. Lower Limb

1. General

- 24 Development of a Model for Modified Transfusion Enhancement of Grafts: A Pilot Study
- 25 Development of a Limb Allograft Model for Graft Enhancement Studies: A Pilot Study
- 26 Development of HLA Class I Transfectants as Suppressor Cell Inducers: A Pilot Study
- 27 Prevention of Immunologic Rejection of Tissue and Limb Allografts
- 28 National Program for Automated Fabrication of Mobility Aids: Eastern Region
- 29 National Program for Automated Fabrication of Mobility
 Aids: Central Region
- 30 National Program for Automated Fabrication of Mobility Aids: Western Region
- 31 CAD/CAM in Prosthetics: Direct Socket Carving
- 32 Functional Biomechanical Characterization and Functional Design Specification: Lower-Extremity Prosthetics
- 33 Posturographic Assessment of Balance Reorganization in Patients with Peripheral Neuromuscular Lesions
- 34 Ongoing Lower-Limb Amputee Database

C. Lower Limb

2. Above-Knee

- 35 Geriatric Prosthetics: Design and Development of an Improved Above-Knee Socket
- 36 Comparison of Four Types of Swing-Phase Knee Controls by Gait Analysis
- 36 Swing-Phase Control Mechanisms for Above-Knee Amputees

C. Lower Limb

3. Below-Knee

- 37 Efficiency of Dynamic Elastic Response Prosthetic Feet
- 38 Gait Initiation in Below-Knee Amputees: Analysis of Safe Function
- 39 CAD/CAM of Below-Knee Prosthetics: Program Studies
- 39 Computerized Analysis of Below-Knee Socket Limb Mechanics

- 39 Anatomically-Based A Priori Alignment Prescription Studies
- 40 The Diabetic Foot with Partial Amputation:
 A Biomechanical Study
- 41 Clinical and Laboratory Study of Amputation Surgery and Rehabilitation
- 42 Biomechanical Power Analysis of Prosthetic Feet: A Pilot Study
- A Quantitative Method of Prosthetic Socket Construction for Below-Knee Amputees
- 43 Dynamic Alignment of Below-Knee Amputees
- 44 Biomechanical Evaluation of Energy-Storing Prosthetic Feet
- 44 Gait of Children Having a Unilateral Below-Knee Amputation
- 45 Analysis of Metabolic Factors in the Gait of Congenital Below-Knee Amputees: A Comparison of the Seattle Foot and the SACH Foot
- 46 Feedback at Heelstrike for the Primary Below-Knee Amputee
- 46 Mechanical Properties of Soft Tissue

II. Biomechanics

A. Bone and Joint Studies

- 47 Biomechanics of Patellofemoral Joint Disorders: In Vitro Human Cadaver Study
- 48 Biomechanics of Patellofemoral Joint Disorders: In Vivo Canine Study
- 49 Surgery Simulation Computer Models to Study Reconstructive Surgeries
- 50 Patient-Specific Finite Element Modeling of Bone from CT Scan Data
- 51 Load-Bearing Characteristics of the Wrist with Intercarpal Arthrodesis
- 51 Correlation of Streaming Potentials with Stages of Bone Repair/Remodeling
- 52 In Vivo and In Vitro Mechanical Behavior of the Normal and Degenerated Lumbar Spine
- 53 Contact Pressure in the Hindfoot
- 54 Finger-Force and Motion Apparatus
- 55 Quantitative Functional Anatomy of the Human Shoulder
- 55 Biomechanical Modeling for 3-D Analysis of Lifting
- 56 Evaluation of Osteoporosis by Ultrasound, CAT Scan, and Photon Absorptiometry
- 57 Establishing the Reliability and Validity of an X-Ray Measure for Shoulder Subluxation
- 58 Harvard-Massachusetts Institute of Technology Rehabilitation Engineering Center
- 59 Computer-Aided Surgical Simulation of Femoral and Tibial Osteotomy
- 60 Studies of the Strength Parameters in the Vertebral Body
- 61 Analysis of Strength Reduction Due to Metastatic Defects in the Lumbar Vertebrae
- 61 Force and Stability Analysis of the Human Elbow
- 62 Prediction of the Evolution of Bony Architecture
- 63 Growth of Cartilage in Vitro: The Role of Mechanical Factors

- 64 Electrical Properties of Wet Bone as a Function of Frequency and Microstructure
- 65 Nondestructive Surface Detection of Cartilage Degeneration via Electromechanical Spectroscopy
- 66 Measurement of the Degrees-of-Freedom of the Normal Human Knee In Vivo
- 67 Using Axodes to Compare In Vivo Knee Kinematics Measured Using Bone versus Skin-Mounted Markers
- 68 Dynamic Estimation of Joint Loading
- 69 Computer-Based Teaching Aid for Temporomandibular Joint Dysfunction
- 69 Capture and Analysis of Joint Sounds
- 70 Anterolateral Instability of the Ankle
- 71 Three-Dimensional Biomechanical Model of the Shoulder Mechanism

B. Human Locomotion and Gait Training

- 72 Development of a Sensory Substitution System for the Insensate Foot
- 73 Asymmetry of Plantar Pressures During Normal Walking
- 73 Cadence Effects on Plantar Pressures
- 74 Normal Cane Cadence
- 74 Long-Term Studies of Plantar Pressures Under Insensate Foot
- 75 Assessment of Walking Handicap and Reflex Control of Normal and Pathological Walking
- 76 Comparison of the Kinematic and Kinetic Components of Gait in Adult Males with Obesity and in Males of Normal Weight
- 76 Quantification and Display of Musculoskeletal Anatomy
- 77 Mobility Analysis
- 79 Musculoskeletal Modelling
- 80 Development of a Gait Pathology Expert System
- 80 Curve Estimation in Motion Analysis
- 81 Assessment of Variability in Human Walking and in Robots
- 81 Clinical Assessment of Hemiplegic Gait Following Stroke: A Pilot Study
- 82 Mechanics of Ankle-Foot Orthoses
- 83 Development of a Posture Sensor and Evaluation System for Use in Gait Training of the Locomotion Disabled

C. Other

- 83 Nuclear Magnetic Resonance (NMR), Biochemical, and Biomechanical Studies of the Human Foot Pad
- 84 An Investigation of the Relationship of Postural Sway and Endurance in Sitting
- 85 Biomechanical Measurements for Quantitative Assessment and Diagnosis of Dysphagia

III. Functional Assessment

- 37 C SCAT: A Method for Differential Diagnosis of Tremors Based on Their Response to Mechanical Loads
- 88 Psychomotor Test to Evaluate Hand Sensory Substitution Devices: A Pilot Study
- 89 Rehabilitation Efficacy for Brain and Spinal Injury
- 89 Portable Microprocessor-Based Heart Rate Processor

- 90 Determination of Ankle Range of Motion Using OMNITRACK
- 90 ELITE: A Fully Automatic 3-D System for Movement Assessment
- 91 AUSCAN System: An Optoelectronic Analyzer of Posture
- 92 Rating Scale Analysis of Functional Assessment Measures
- 93 Spherical Coordinate Virtual Environment for Limb-Loading Experiments
- 93 Development of Improved Seating Assessment Review Procedures
- 94 Objective Functional Assessment and Rehabilitation of Low Back Disability
- 94 Programming Disorders in Fine Motor Skills: The Clinical Application of a New Assessment Procedure

IV. Functional Electrical Stimulation

A. General

- 95 Comparison of Percutaneous Pudendal Nerve and Surface Electrical Stimulation for Bladder Inhibition
- 96 Improving Exercise Performance of Quadriplegics
- 97 Evaluation of FES Techniques for Exercise
- 98 FNS Effects Upon Venous Pooling in Geriatric and Mobility-Impaired Patients
- 99 Management of Central Ventilatory Insufficiency: Abdominal and Thoracic Stimulation
- 100 A Study to Investigate the Effects of Functional Electrical Stimulation Exercise on Bone Mineral Density in Spinal Cord Injured Individuals with Disuse Osteoporosis
- 101 Prevention of Secondary Complications in Spinal Cord Injury by Electrical Stimulation: Wheelchair-Attached Balance Frame
- 101 Rehabilitation Engineering Center for Restoration of Neural Control
- 102 I. Development of a Functional Electrical Stimulation (FES) Database and Dissemination Service
- 103 II. Development of Upper Extremity Control Employing Functional Electrical Stimulation
- 104 III. Electrical Stimulation in the Treatment of Scoliosis
- 104 IV. Characterization and Reduction of Spasticity by Stimulation in the Hemiplegic Upper Extremity
- 105 Bladder Evacuation by Direct Sacral Root Stimulation
- 106 Microstimulator for Functional Neuromuscular Control
- 106 Noninvasive Stimulation of the Human Central Nervous System
- 107 Coatings for Protection of Integrated Circuits
- 107 Development and Evaluation of Safe Methods of Intracortical and Peripheral Nerve Stimulation
- 108 Studies of the Electrochemistry of Stimulating Electrodes
- 108 Cultured Neuron Probe
- 108 Stimulating Electrodes Based on Thin-Film Technology
- 109 Single-Channel Microstimulator for Functional Neuromuscular Stimulation
- 109 Multichannel Multiplexed Intracortical Recording Arrays
- 110 Electrodes for Functional Neuromuscular Stimulation
- 110 Dynamic Properties of Electrically Stimulated Muscles
- 111 Control of Limb Joint by Co-Stimulation of Agonist-Antagonist Muscles

- 111 EMG as a Force Feedback in Electrically Stimulated Muscle
- 111 Computer-Controlled Orderly Stimulation of Motor Units in Various Strategies
- 112 Modelling and Identification of Electrically Stimulated Muscle
- 112 Muscle Stimulation Strategies for High-Contact Density Microstimulation Electrodes

B. Upper Limb Applications

- Functional Neuromuscular Systems (FNS) for Upper Extremity Control
- 115 Optimizing Myoprosthetic Management with Microcomputers
- 116 Neural Net Control of FES-Aided Grasp Restoration in Quadriplegics
- 116 Evaluation of Command Channels for Upper Limb Neural Prostheses
- 117 Prevention of Secondary Complications in Spinal Cord Injury by Electrical Stimulation: Wrist Extensor Strengthening
- 117 Prosthetic Sensory Transducers
- 118 Functional Neuromuscular Stimulation for Restoration of Hand Grasp
- 118 Effects of Nerve Electrical Stimulation on Upper Extremity Recovery Following Quadriplegia

C. Lower Limb Applications

- 119 Computer Models for Designing FES Systems for Paraplegic Mobility
- 120 Improvements in the Gait and Strength of Post-Surgical Patients Due to Electrical Stimulation
- 121 Fatigue of Paralyzed Muscles Activated by Functional Electrical Stimulation in Paraplegics
- 121 Functional Tasks Restored in Paralyzed Man Using Electronic Orthotics: Neural Network Controllers for FNS Locomotion
- 122 Functional Tasks Restored in Paralyzed Man Using Electronic Orthotics: FNS Walking in Paraplegics
- Functional Tasks Restored in Paralyzed Man Using Electronic Orthotics: Implant Devices for Lower Extremity FNS Systems
- 124 Functional Tasks Restored in Paralyzed Man Using Electronic Orthotics: FNS Systems for Gait Assist and Motor Retraining in Stroke and Head Injury Subjects
- 125 Nonlinear Controllers for FES-Aided Gait
- 126 Closed-Loop Control of Functional Neuromuscular Stimulation Using Implantable Force Sensors

V. Geriatrics

- 127 Interventions to Improve Dressing Behavior in Cognitively Impaired Veterans
- 128 Detection and Prevention of Loss of Balance in the Elderly: A Pilot Study
- 129 Design of a New Toilet: Transfer and Access Pilot Study
- 130 Spatial Orientation and Wayfinding in Elderly Persons
- Motivational Devices for Promotion of Aerobic Exercise in the Elderly

- 132 Assessment of Age-Related Changes in Visual Spatial Organization
- 133 Knowledge-Based System for Selecting Elopement-Control Devices
- 134 Environmental and Behavioral Factors in Falls Among the Elderly
- 135 Systematic Observation of Wandering Behaviors in Older People and Contributing Factors
- 136 Predicting Wayfinding Ability from Laboratory-Based Spatial Tasks
- 136 Why Don't All Impaired Elderly Fall?
- 137 Age-Related Changes in Sensory-Motor Performance
- 138 Seat Angle as a Therapy for Patients with Osteoporosis
- 139 Use of Technology to Promote Rehabilitation of Older Persons: Reducing Barriers to Independence
- 140 Attitudes Of and Toward Older Persons with a Disability:
 Their Measurement and Their Role in Rehabilitation
- 141 Late-Life Effects of Early-Life Disability: Comparisons with Age-Matched Controls on Indicators of Physical, Psychological and Social Status
- 141 Interdisciplinary Human Development Institute Consortium on Aging and Developmental Disabilities
- 142 Rehabilitation Research and Training Center Consortium on Aging and Developmental Disabilities
- 143 Patterned Urge-Response Toileting for Incontinence
- 144 Managing Lower Urinary Tract Dysfunction in Aging Women
- 145 Cognitive and Emotional Profile of Neuropsychiatric Disorders
- 146 Alzheimer's Disease and Driving

VI. Head Trauma and Stroke

- 147 Computer-Assisted Treatment of Hemi-Inattention in R-CVA Patients
- 148 Hemi-Neglect Syndrome: Visual Scanning and Reading Skills Retraining
- 149 Expanding Loose Training Alternatives with Response Elaboration Training
- 150 Demonstrating the Efficacy of Memory Training
- 151 Effects of Thermal Stimulation on Dysphagia After Stroke
- 151 An Interactive Computer Program to Assess and Facilitate Cognitive Function in Head-Injured Young People
- 152 Substance Abuse Prevention Programming for Patients
 Incurring Traumatic Injury
- 153 Quantification of Motor Coordination of the Lower Limb in Normal and Hemiparetic Subjects
- 154 Pediatric Trauma Registry
- 155 Trauma Center Impact on the Disability Outcomes of Brain and Spinal Cord Injured Survivors
- 155 Studies of Spasticity in Brain-Injured Patients
- 156 Functional Recovery After Focal Cortical Injury (Monkeys)
- 156 Cognitive-Linguistic Mechanisms in Writing Disorders
- 157 Stroke Clinical Center
- 157 Hemispheric Specialization in Stroke Patients (Human)
- 158 Treatment of Affective Deficits in Stroke Rehabilitation
- 158 Neural Basis of Motor Behavior

- 159 Reduced CNS Injury and Improved Recovery with Gangliosides
- 160 Information Extraction from Peripheral Nerves
- 160 Brain-Injury Memory Disorders Research Center
- 161 Ultra-Early Evaluation of Intracerebral Hemorrhage
- 161 Individualized Memory Prosthetic Device
- 162 Reversible Focal Cerebral Ischemia
- 162 Quantitative Histopathology of Multifocal Cerebral Ischemia
- 163 Neurotransmitter Release: Role in Ischemic Injury
- 164 1989 Gordon Research Conference on Neural Plasticity
- 164 PET Study of Biochemistry and Metabolism of the CNS
- 165 Cerebral Ischemia, Viability and Oxidative Metabolism
- 165 Head Injury Clinical and Laboratory Research Center
- 166 Center for Stroke Research
- 166 Reorganization in Brain and Spinal Cord After Injury
- 167 Precursors of Stroke Incidence and Prognosis (Human)
- 167 Manipulation of Adenosine Metabolism and Control of Stroke
- 168 Microvascular Occlusions: Acute Focal Cerebral Ischemia
- 168 Biochemical Mechanisms of Brain Injury
- 169 Treatment of Physiological Disturbances in Head Injury
- 170 Epidemiologic Study of Stroke Outcome in Three Ethnic Groups
- 170 Calcium Channel Activation in Models of Cerebral Ischemia
- 171 Modulation of Glucose Transporters in Brain Endothelium
- 171 Post-Ischemic Hyperexcitability: The Role of Adenosine
- 172 Role of Magnesium in the Pathophysiology of Brain Injury
- 173 Biochemical Receptor Studies in Stroke (Rats, Rabbits)
- 173 Disorders of Spatial Behavior in Right Brain-Damaged Stroke Patients
- 174 Long-Term Effects of Closed Head Injury: A Disabilityand Handicap-Oriented Study
- 174 Development of a Multidisciplinary Measurement System for the Quantification of Deficits Following Traumatic Brain Injury

VII. Independent Living Aids

A. General

- 175 Access and Mobility Requirements for Children and Adolescents
- 176 Development of an Infant Crib to be Used by Physically Disabled Parents
- 176 Development of Systems to Enable Physically Disabled Persons to Board Inter-City Buses

B. Robotics

- 177 Clinical Evaluation of a Vocational Desktop Robotic Aid for Severely Physically Disabled Individuals
- 178 High Speed Obstacle Avoidance (Mobile Autonomous Robot Base for Rehabilitation Applications): A Pilot Study
- 179 Global Travel (Mobile Autonomous Robot Base for Rehabilitation Applications): A Pilot Study
- 180 Companion Tracking (Mobile Autonomous Robot Base for Rehabilitation Applications): A Pilot Study

- 181 Rehabilitation Robotics Research at King's College, London
- 181 Human-Machine Interaction via the Transfer of Power and Information Signals
- 182 Development of Semiautonomous Control for the UT/HMRC Robotic Aid
- 184 Design and Implementation of a Rehabilitation Robotics
 Programming Environment
- 185 Task-Oriented Hybrid Force/Position Control
- 186 Design of a Small Compliant Robot for Children
- 187 Quantification of the Effective Manual Dexterity Skills of Users of Rehabilitation Robotics Systems
- 188 Quantitative Evaluation of Voice-Controlled Robotic Manipulation for Rehabilitation Purposes
- 189 Rehabilitation Robotics/Man-Machine Interface Laboratory

C. Communication Methods and Systems

- 190 Computer Keyboard Emulation Through Interpretation of Pointing Gestures
- 191 Computer Interpretation of Gestures Made by the Severely Disabled
- 191 A Blackboard Expert System Approach Toward Implementing an Adaptive Force Joystick Computer Input Device for the Tremor Disabled
- 192 Formation and Modification of Attitudes Toward Young
 Augmentative Communication Device Users
- 192 A New Approach to Augmentative Communication Services with Synergy Between a Central Resource of Expertise and Community-Based Programs: A. Implementation
- 193 A New Approach to Augmentative Communication Services with Synergy Between a Central Resource of Expertise and Community-Based Programs: B. Evaluation
- 194 Development of a Universal Communication Aid: LUCY
- 194 Speech Synthesis Program
- 195 Personal Computer-Based Augmentative Communication Systems
- 196 Development of an AAC Software Architecture
- 197 Rate Enhancement Through Sentence Compansion
- 198 A Force-Sensing Resistor Switch for Use by Handicapped Children
- 198 Development of Input Interfaces for Handicapped Children
- 199 Switchless Selection Techniques Using a Headpointing Device
- 200 Gestural Predictive Control Systems for Persons with Motor Impairments
- 201 Mobility Training and Evaluation for the Home and School Environment
- 202 Guidelines for the Requirements of Computer-Based Systems to Accommodate Direct Manipulation as a Means of Alternate Access
- 203 Development of a Light Pointer
- 203 Extraordinary Computer/Human Operation
- 204 Development of a Voice Output Intelligent
 Communication Enhancement System (VOICES)
- 204 Modeling of Performance with Computer Access and Alternative Communication Systems

D. Private and Public Programs

- 205 Using Existing Databases to Analyze the Medicaid Personal Care Optional Benefit Service
- 206 Applicable Barrier-Free Concepts Adaptable to Modern Technology Developments
- 207 Development of a Collaborative Training and Job Placement Program in Computer-Aided Drafting
- 207 Development of a Parts Counter for Persons with Mental Retardation
- 208 Rehabilitation Engineering Center on Service Delivery Models
- 209 Operational Definition of Independence
- 210 Evolution of Independent Living Programs: A Longitudinal Study
- 211 The Definition of "Peer": Consumer Perspectives and Significance in the Delivery of Counseling Services
- 211 Independent Living in Rural Areas: A Longitudinal Study
- 212 Instrumental Social Support as a Buffer of Psychological Stress for Persons with Physical Disabilities
- 213 Development of an Instrument to Measure Adequacy of Personal Assistance Services
- 213 Arrangements for Receiving Personal Assistance Services
- 214 Effect of Personal Assistance Services on the Long-Term Health of a Rehabilitation Hospital Population:
 Perceptions of Rehabilitation Professionals
- 215 Occupational Stress Among Executive Directors of Centers for Independent Living
- 216 New Models for the Provision of Personal Assistance Services
- 217 High School Prevocational Intervention Study
- 217 Rehabilitation Engineering Center
- 218 A Computerized Information Network Supporting the Choice of Technical Aids
- 219 Creation of a Regional Network of Technical Aids Information Centers in Lombardy, Italy
- 220 Independent Living at Home for Severely Disabled Persons: An Experimental Project
- 220 SEDL/Regional Rehabilitation Exchange
- 221 Effect of Personal Assistance Services on Productivity and Daily Living Among Japanese with Severe Physical Disabilities
- 222 West German Building Standards to be Transferred as a New General Barrier-Free Building Code
- 223 Development of a Dynamic Interactional Rehabilitation
 Data System
- 224 Research of Therapy and Traditional Medicine
 Application in Rehabilitation in the People's Republic
 of China
- 224 Development of Methods for Egress of the Disabled and Elderly from Private or Public Buildings

VIII. Muscles, Ligaments, and Tendons

A. Muscles

- 226 Noninvasive Electromyography
- 226 Muscle Fiber Recruitment During Submaximal Electrical Stimulation
- 227 Biochemical and Myoelectric Events During Fatigue

- 228 Low Back Pain and Muscle Fatigue
- 228 Back Analysis System (BAS)
- 229 Back Assessment of Athletes from Varsity and Freshman
 Crew Teams
- 230 Back Assessment in Patients with Fibromyalgia
- 230 Mechanical Recruitment of Low Back Muscles
- 231 The Lumbarator: A Real-Time Simulator of Lumbar Muscle Force Distribution
- 231 The Myoelectric Signal Decomposition Technique
- 232 Motor Unit Firing Behavior in Older Adults
- 232 Recurrent Inhibition in Older Adults
- 233 The Role of Cutaneous Receptors in Motor Unit Firing Behavior
- 233 Characterization of Back Muscles by Means of Electrical Stimulation
- 234 Control Properties of Lower Back Muscles
- 234 Fundamental Analysis of Postural Sway
- 235 Experimental Investigations of Common Drive Behavior in Human Motor Units
- 235 Muscle Fatigue Correlates for Concurrent Myoelectric and NMR Measurements
- 236 Myoelectric Changes During Fatigue
- 236 Muscle Fatigue Monitor (MFM) Update
- 237 Electromyographic Spectrum Analysis of Paraspinal Muscles: Changes Following Physical Training
- 237 Electrode Array Signal Processing
- 237 Postural Muscle Adaptability During Prolonged Spaceflight
- 238 Mechanism of Torque Generation in the Frog Hindlimb
- 238 Physiological Significance of Tendon Compliance
- 239 Skeletal Muscle Architectural Design
- 239 Selective Muscle Fiber Damage Due to Eccentric Contraction
- 240 Utility and Physiology of Botulinum Toxin for Involuntary Movement Disorders
- 240 Biological Signal Processing
- 240 Coordination of Muscles in Gait
- 241 Skeletal Muscle Reaction to Immobilization
- 242 EMGGEN: A Software Package for Myoelectric Signal Generation
- 242 Portable 8-Channel Myoelectric Preamplifier
- 243 EMG Evaluation of Car Seats Associated with Fatigue and Muscle Activity
- 243 EMG Power Spectrum and Histological Analysis: Percutaneous Biopsies
- 244 Temporomandibular Joint Pain Syndrome: EMG Power Spectrum Analysis of the Masseter and Temporalis Muscles Before and After Occlusal Splint Therapy

B. Ligaments and Tendons

- 245 Laser Biostimulation of Healing Tendons: Effects of Treatment Parameters
- 246 Treatment of Variable Partial Flexor Tendon Lacerations
- 247 Structural and Functional Properties of Normal and Healing Ligaments: Part 1
- 248 Structural and Functional Properties of Normal and Healing Ligaments: Part 2
- 249 Anterior Cruciate Ligament Healing

IX. Neurological and Vascular Disorders

A. General

- 250 Comparison of Treatment Programs for Multiple Sclerosis Rehabilitation
- 251 Neuromuscular Function: Comparison of Symptomatic and Asymptomatic Postpolio Subjects
- 252 Mechanisms of Damage-Induced Trigeminal Reorganization
- 253 Microdialysis Membranes for Chronic Studies
- 253 Neural Pathways Involved in Tactile Discrimination
- 254 Multi-Detector Brain Analysis System (MDBAS)
- 254 Cerebral Capillary Perfusion During Oxygen Lack
- 255 Time-Resolved Spectroscopy of Hemoglobin in the Brain
- 255 Motor Control Systems in the Spinal Cord
- 256 Techniques for Making Connections with the Nervous and Musculoskeletal Systems
- 256 Studies in Neuromuscular and CNS Diseases and Their Experimental Models
- 257 The Role of Artificial Sensory Feedback in the Restoration of Motor Control
- 257 Pathophysiology of the Anemia of Chronic Renal Failure
- 258 PLEXUS: A Knowledge-Based System to Assist with the Diagnosis and Treatment Planning of Brachial Plexus Injuries

B. Arthritis

258 Biochemical Analysis of Synovial Activation in Joint Dysfunction

C. Low Back Pain

- 260 Low Back Pain Studies
- 261 Development of a Computerized Documentation-Data Analysis System for Work Hardening
- 262 Low Back Pain and Sciatica: Factors for Success of Therapy

D. Swallowing Disorders

- 263 Assessment of the Swallow Reflex in Patients with Dysphagia
- 264 Swallowing Dysfunction in Nephropathic Cystinosis

E. Vascular Disorders

- 265 Postoperative Thromboembolism in Surgical Patients
- 265 Basic and Clinical Studies of Coagulation Proteins
- 265 Emphysema—Physiologic Effects of Nutritional Support
- 266 Trial of Inspiratory Muscle Rest and Exercise in Chronic Obstructive Lung Disease
- 267 Training Level versus Cardiac Adaptations in Patients with Coronary Heart Disease
- 267 Effects of Social Support on Recovery from Coronary Artery Bypass Graft Surgery
- 268 Randomized Trial of Rehabilitation in Chronic Obstructive Pulmonary Disease
- 269 Strategies for Promoting Adult Asthma Self-Management
- 269 Application of Self-Management System to Asthmatic
- 270 Vibration Sense and Tarsal Disintegration

271 Motor Units in the Tibialis Anterior Muscle Six Months
After Self-Reinnervation

X. Oncology

- 272 Montana Family Cancer Project
- 273 Cricopharyngeal Myotomy Study
- 273 Promoting Patient Self-Care in Head and Neck Cancer
- 274 Living With Homecare: Cancer Patients and Their Caregivers
- 275 Nurse Interventions Promoting Self-Help Response to Cancer
- 276 Compact Disk Interactive (CD-I) Tutorial and Simulation in Cancer Pain Management
- 276 Clinical Studies in Cancer Surgery/Cancer Rehabilitation
- 277 Electrical Current in the Treatment of Malignant Tumors

XI. Orthopedic Implants

A. General

- 278 Percutaneous Prosthetic Limb Attachment
- 279 Fracture Healing and Bone Remodeling in Plated Long-Bones
- 280 Bone Ingrowth and Remodeling with Porous Coated Implants
- 281 High Viscosity Cooler Acrylic Bone Cement
- 282 Effects of Treatment for Heterotopic Bone Formation on Biological Fixation
- 283 Effect of Surgical Fit on the Biological and Mechanical Response to Porous-Surfaced Implants
- 284 Optimization of Orderly Oriented Wire Mesh for Prosthetic Arthroplasty
- 284 Evaluation and Examination of Retrieved Porous-Coated Orthopaedic Prostheses
- 286 Surface Failure in UHMWPE Joint Components
- 287 Cell Response to Modified Ti Surfaces (Rats)
- 287 Titanium and Ti-6Al-4V Alloy Implant Fabrication (Rabbits)
- 288 Ion Sputter Deposition of Ca-P Thin Films
- 289 Ion Implantation to Reduce Wear on Polyethylene Prosthetic Devices

B. Hip

- 290 Epiphyseal Hip Replacement: A Pilot Study
- 290 Quantitative Analysis of Total Hip Arthroplasty on Stress and Strain
- 291 Rehabilitation Implications of In Vivo Hip Pressure Measurements: Part 1
- 293 Rehabilitation Implications of In Vivo Hip Pressure Measurements: Part 2
- 294 Optimized Surface Bonding and Stiffness of Femoral Endoprostheses
- 295 Use of Proximal Femoral Allografts in Total Hip Revision
- 296 Dynamic Implant for the Development of a Cementless Prosthesis

- 297 Correlation of In Vivo Synovial Joint Pressure Data with that from Posthumous Hemipelvis and Proximal Femur Including Pressure-Instrumented Endoprosthesis
- 298 Synovial Joint Mechanics and the Pathogenesis of Osteoarthritis

C. Knee

- 298 All-Plastic Total Knee Replacement
- 300 Articular Cartilage Replacement Prosthesis for the War Injured and Aging
- 300 Improved Anchorage of Knee Replacements Based on Confirmed Design Rules

XII. Orthotics

- 302 Adjusted versus Unadjusted Foot Orthoses in the Prevention of Foot Ulcers in Diabetics
- 302 Clinical Evaluation of the Vannini-Rizzoli Stabilizing Limb Orthosis
- 305 Orthotic Stabilization of Thoracolumbar Injuries
- 306 Concerted Action Mobility Restoration for Paralyzed Persons (MORE Project)
- 307 Muscle Recruitment Optimization in Walking Restoration by FES
- 308 FES-Aided Paraplegic Gait Using a Controlled-Brake Orthosis
- 308 Electrical Stimulation Strategy to Inhibit Spasticity
 During Gait
- 309 Criticality of Fit of Ankle-Foot Orthoses
- 310 Quick-Attaching Brace for Improved Paraplegic Mobility
- 310 Comparative Study of 49 Walkers
- 311 Free Knee Brace System
- 312 Comparison of Velocity and Position Control Strategies for the Case Western University (CWRU) Upper Extremity FNS Orthosis
- 313 Further Development of a Protective Helmet for Disabled Persons
- 313 Evaluation of a Powered Orthotic Device for the Enhancement of Upper-Limb Movement
- 314 Development of a Water-Resistant Covering for AFOs During Recreational Activities
- 315 Development of a Powered Orthosis for Lower Limbs
- 315 Development of a Practical, FES-Powered Walking Orthosis for Paraplegics
- 316 Functional Biomechanical Characterization and Functional Design Specification: Orthotics
- 317 MED Arm: A Six-Degree-of-Freedom Orthosis Simulator for Tremor Research
- 318 Knee Flexion Alarm
- 318 Upper Extremity Training Device
- 319 CEDO: A Controlled-Energy-Dissipation Orthosis for Tremor Reduction in Activities of Daily Living
- 320 Mobile Arm Support
- 320 Lifting Seat

XIII. Psychological and Psychosocial Disorders

- 322 Effects of Expectation and Reward on Subtypes of Schizophrenia
- 323 Psychiatric Rehabilitation in Nursing Homes
- 324 Change in Vocational Interests and Their Relationship to Adjustment After Spinal Cord Injury
- Relation of Substance Use to Rehabilitation Outcome in Persons with Spinal Cord Injury
- 325 Psychosocial Aspects of Functional Electrical Stimulation
- 325 A Description of Deaf Mental Health Service Clients
 Nationwide
- 326 Longitudinal Changes in Adjustment After Spinal Cord Injury
- 327 Psychosocial Factors in Adjustment of Bone Marrow Transplant (BMT) Survivors
- 328 Neuropsychological Testing of Children and Adults with HIV Disease
- 328 Patient Perception of Blood Glucose Levels
- 329 Physiological and Psychological Mechanisms for Irritable Bowel Syndrome
- 329 Patterns of Eating in Lean and Obese Humans
- 330 Neuroanatomical Asymmetry and Psychological Characteristics
- 331 Program in Cognitive Neuroscience
- 331 Cognitive Control of Movement (Human)
- 332 Anatomical Substrates of Complex Behavior
- 332 Secondary Complications and Adjustment in Spinal Cord Injury
- 333 Effects of Active Recreation Participation on Psychological Adjustment and Social Integration of Spinal Cord Injured Patients
- 334 Nutritional Education Program for Schizophrenic Outpatients

XIV. Sensory Aids

A. Hearing Impairment

- 335 Computerized Adaptive Methods for Selecting Hearing Aids
- Validity and Reliability of a Physiological Test of Vestibular Function
- 337 Auditory Prosthesis for Sensorineural Hearing Loss
- 337 Variables Affecting Hearing Aid Performance
- 338 Direct Measurement of Loudness Recruitment in Hearing-Impaired Veterans
- 340 Effect of Presence versus Absence of Prolonged Amplification on Audition
- 341 Perception of Reverberation by the Hearing Impaired
- 342 A Prospective Randomized Cooperative Study of Advanced Cochlear Implants
- 342 Early Detection of Hearing Loss from Ototoxic
 Agents by High-Frequency Auditory Evaluation:
 A Cooperative Study
- 343 Measurement and Prediction of Benefit from Amplification
- 344 Studies on Amplification Selection for the Hearing-Impaired Veteran

- 345 Development of a Digital Hearing Aid and Computer-Based Fitting System: Phase II
- 347 Basic Mechanisms and Rehabilitative Strategies for Presbycusis: Part I
- 347 Basic Mechanisms and Rehabilitative Strategies for Presbycusis: Part II
- 349 Sign Language Telephone
- 349 Local Area Network Image Transmission
- 350 A Study of Successful Deaf High School Students
- 350 A Social Cognition Program for Deaf Adolescents and Adults
- 351 Effects of Interpreter Training on Rorschach Scores
- 351 Linguistic Indicators of Thought Disorder Among Deaf Mental Patients
- 352 Identification of Organic Impairment Through Neuropsychological Assessment
- 352 Ethnography and Evaluation of DeafCAN: A Program for Minority Deaf College Students
- 353 Peer Counseling Programs for Deaf Clients
- 353 Therapeutic Preparation of Deaf Clients
- 354 Signaling Systems/Alternative Technologies for Deaf and Severely Hard of Hearing People
- 354 Innovative Technology for Deaf and Hard of Hearing People/Integrated Computer Workstation for Deaf Individuals
- 355 Feature Extraction Methods for a Video Telephone for Deaf and Hard-of-Hearing People
- 356 Adaptive Capabilities of Postural Stabilizing Reflexes
- 356 Cochlear Implant and Tactile Aid Studies with the Deaf

B. Speech Impairment

- 357 Computer-Assisted Speech Evaluation Expert System
- 357 Hierarchical Computerized Language Treatment for Aphasic Adults
- 358 Cortical Auditory-Evoked Potentials and Behavioral Measures of Aphasia
- 359 Development of Microcomputer and Clinician Treatment Procedures for Aphasia
- 360 The Influence of Topic and Listener Familiarity on Aphasic Language
- 360 Characteristics of Tracheoesophageal Voice in Four Prosthetic/Occlusion Conditions
- 361 Chest Wall Kinematics in Alaryngeal Speakers: A Pilot Study
- 362 Ideomotor Apraxia: Recovery and Treatment
- 363 Augmentative Communication for Intensive Care Unit Patients
- 363 Promoting Generalized Language Use: An Analysis of Treatment and Subject Variables
- 364 Neurogenic Communication Disorders in Remote Settings
- 365 Exploration of Simple Environmental Control Technology with Severely Multiply Disabled Students
- 366 Development of a Computer-Based Expert System for the Selection of Assistive Communication Devices
- 366 Evaluation of Voice Amplifiers
- 367 Developing the Role of Maxillofacial Prosthodontists in a Rehabilitation Team for Disarthric Patients
- 368 Evaluation of Gestural Methods for Control of Computer-Based Communication Systems

- 368 Evaluation of the Functional Communicative Benefit of VIC for Persons with Chronic Global Aphasia
- 369 Early Intervention with Globally Aphasic Stroke Patients Using a Computerized Visual Communication Technique
- 370 Evaluation of Handheld Prostheses for Speech Therapy
- 371 Language Organization Studied by Cortical Stimulation
- 371 Application of Automatic Phoneme Analysis to the Assessment of Motor-Impaired Speech
- 372 Determinants of Intelligibility in Dysarthric Speech
- 373 Special Projects and Demonstrations for Providing Speech Recognition Vocational Services to Individuals with Severe Disabilities
- 373 Development of a Throat Microphone

C. Vision Impairment

- 374 Motorized and Autofocus Control Systems for Telescopic Low Vision Aids
- 374 User Interface Environment for Visually Handicapped Computer Users: A Pilot Study
- 375 Development of the Family Training Program
 Curriculum in Low Vision
- 376 Environmental Information Needs for Wayfinding by Special Populations
- 377 Development and Validation of Criteria for Task Safety in Blind Mobility
- 378 Relationship of Auditory Skills to the Mobility of Blind and Visually Impaired Individuals
- 379 Development of an Objective Measure of Orientation Skill: A Pilot Study
- 379 Identification and Classification of the Career Transition Problems of Blind and Visually Impaired Youth in Transition from School to Work
- 380 Identification of Differential Costs and Time Usage of Blind and Visually Impaired Persons and the Vocational Rehabilitation Process
- 380 Differential Costs and Time Usage of Blind and Visually Impaired Persons and the Vocational Rehabilitation Process
- 381 Identification of Differential Characteristics of Sites
 Selected or Rejected by State Licensing Agencies for
 the Operation of the Randolph-Sheppard Business
 Enterprise Program
- 381 Computer Access Technology for People with Severe Visual Disabilities: Development, Evaluation, and Dissemination of a Knowledge-Based Expert System
- 382 Enhancing the Productivity of Randolph-Sheppard
 Business Enterprise Program Facilities Through
 Personal Computers
- 383 Evaluation of Randolph-Sheppard Business Enterprise Program Facility Designs and Effects of Illumination and Color Contrast Considerations
- 383 Broad-Based Technical Assistance Documents and Agency Effectiveness Analysis to Enhance Competitive Employment of People Who Have Visual Disabilities
- 384 Workplace Visual Functioning Assessment
- 384 Assessment of the Need for a National Information and Referral Center for Partially Sighted Individuals
- 385 Development of Hemianopsia Glasses

- 385 Microcomputer Software for Blind and Partially Sighted People
- 386 Smith-Kettlewell Rehabilitation Engineering Center
- 389 Pictures for Persons Who Are Blind: A Study with Raised Line Drawings
- 390 Fast Motion in Unknown Environments with NavBelt: A Sophisticated Electronic Travel Aid for the Blind

D. Deaf-Blind

- 391 A Second Generation Mechanical Hand Communication Aid for the Deaf-Blind
- 392 A Robotic Fingerspelling Hand for Communication and Access to Text by Deaf-Blind Persons
- 392 Application of Technological Devices for the Enhancement of Cognitive Performance and Communication in Prelingual Deaf-Blind Children
- 393 Validation of Instructional Practices with Youth Who Are Deaf-Blind
- 394 Improving and Expanding Social Interaction Skills of Youth with Deaf-Blindness in Supported Employment Settings

XV. Spinal Cord Injury

A. General

- 395 Accelerometric Body Segment Motion Analysis During Spinal Injury Patient Handling: A Pilot Study
- 396 Factors Influencing Joint Compliance and Reflex Mechanisms Following Spinal Cord Injury
- 397 The Corticospinal System
- 398 Colorado Comprehensive Spinal Cord Injury Surveillance Program
- 399 Psychosocial Adjustment of Persons with Combined Spinal Cord Injury and Traumatic Brain Injury: A Longitudinal Investigation
- 399 A Longitudinal and Cross-Sectional Analysis of Well-Being in Persons with Spinal Cord Injury and Their Caregivers
- 400 Long-Term Costs of Spinal Cord Injury
- 401 Aging in Relation to Spinal Cord Injury
- 401 Life Status Study of Persons with Spinal Cord Injury
- 402 Comparative Rehabilitation Outcomes for Women and
 Men as Reflected by the National Spinal Cord Injury
 Database
- 403 A Comparative Longitudinal Study of Rehabilitation Outcomes for Women and Men with Spinal Cord Injury
- 403 Collaboration Between Model Spinal Cord Injury Systems and Independent Living Centers in Facilitating Independent Living by Persons with Recently Incurred Spinal Cord Injury
- 404 Direct Approach to Synaptic Organization of Nociception
- 404 Spinal Somesthetic Pathways (Monkeys)
- 405 Rehabilitation Technology Needs Assessment of Farmers and Ranchers with Spinal Cord Injuries
- 405 Physiological Mechanisms of Spinal Cord Plasticity
- 406 Electrophysiological Basis for Contraction in the Bladder
- 407 Intrathecal Baclofen for Intractable Spinal Spasticity
- 407 Health and Functional Status of Aging SCI Persons

408 Shepherd Spinal Center's Leisure Education Program:
An Evaluation

B. Treatment and Rehabilitation

- 409 Development and Testing of New Spinal Implant Systems
- 409 Management of the Musculoskeletal Complications of Spinal Cord Injury
- 410 Compression and Ischemia As It Affects Spinal Cord Injury
- 411 Electric Field Distribution in Experimentally Injured Spinal Cord: Improved Function After Electrical Stimulation of Injured Spinal Cord
- Wheelchair Graded Exercise Test for Patients with Lower Limb Disabilities
- 414 Interactive Videodisk Training for Self-Care Skills
- 414 Urinary Bladder Stimulation Following Spinal Cord Injury
- 415 Effect of Exercise on Upper Extremity Recovery Following Quadriplegia
- 416 Control of Perioperative Hemodynamic Instability in Quadriplegia
- 417 Evaluation of Virginia Regional Spinal Cord Injury System Follow-up Care
- 417 Pathologic Effects of Recurrent Bacteriuria in Patients with Spinal Cord Dysfunction
- 418 A Comprehensive Approach to Management of Infertility in Males with Spinal Cord Injury
- 419 Medical and Psychological Considerations Regarding the Surgical or Pharmacological Treatment of Impotence in Males with Spinal Cord Injury
- 420 Influence of Age on Rehabilitation Outcome of Persons with Spinal Cord Injury
- 421 Ultrasound for Urinary Tract Surveillance of Persons with Spinal Cord Injury
- 422 A Clinically-Derived Protocol for Changing Condom Catheters in Males with Spinal Cord Injury
- 422 Histopathology of Denervated Skin Following Spinal Cord Injury
- 423 Natural History and Clinical Course of Skin
 Complications (Excluding Pressure Ulcers) in Persons
 with Spinal Cord Injury
- 424 Natural History and Clinical Course of Urinary Tract
 Complications in Patients with Spinal Cord Dysfunction
- 425 Disuse Osteoporosis in Spinal Cord Injured Patients
- 426 Standard versus Low Molecular Weight Heparin in the Prevention of Thromboembolism in Spinal Cord Injury
- 427 Managing Urinary Tract Infection in Spinal Cord Injury
- 428 Expiratory Muscle Training in Spinal Cord Injury:
 A Randomized Controlled Clinical Trial
- 428 Treatment of Spasticity with Electrical Stimulation in Spinal Cord Injured Men and Women
- 429 Voice-Augmented Telephone Access for Quadriplegics
- 429 Treatment of Infertility Among Spinal Cord Injured
 Males Using Vibratory Stimulation
- 430 Neuromuscular Plasticity: Recovery After Spinalization
- 430 Movement Deficits Following Spinal Cord Lesions (Macaques)
- 431 Fundamental Studies in Spinal Cord Injury
- 431 Clinical Research Center for Acute Spinal Cord Injuries

- 432 Evaluation of Neural Implantation for Recovery from Spinal Injury
- 432 Microstimulation of the Sacral Spinal Cord (I)
- 432 Microstimulation of the Sacral Spinal Cord (II)
- 433 The Role of Weightbearing and FES-Induced Exercises on Bone Loss After Acute Spinal Cord Injury
- 434 Bladder Reinnervation by Anastomosis of L4 VR to L6 VR While Leaving Intact L4 DR as Starter of Micturition
- 434 Prophylaxis for Deep Vein Thrombosis in Acute Spinal Cord Injury Comparing Two Doses of Low Molecular Weight Heparinoid in Combination with External Pneumatic Compression
- 435 Spinal Cord Monitoring Using Adaptive Matched Filters
- 435 Magnetic Resonance Imaging (MRI) Changes Associated with Chronic Post-Traumatic Myelopathy
- 436 Comparative Long-Term Evaluation of Urologic Management Methods
- 436 Comparative Effectiveness of Two Methods of Weaning Quadriplegics From a Ventilator

C. Spinal Cord Regeneration

- 437 Toward Better Methods of Nerve Repair and Evaluation
- 438 Axonal Regeneration in Artificial Nerve Graft Model
- 439 Artificial Nerve Graft: Union of Cellular and Noncellular Components
- 440 Regeneration and Functional Recovery in Neural Tissue
- 440 Recovery and Regeneration After Spinal Neuron Injury
- 441 Center for Acute Spinal Cord Injury
- 441 Spinal Cord Injury Research Center
- 442 Mechanisms of Recovery After Spinal Cord Injury
- 442 Recovery of Function After Spinal Cord Injury
- 443 Spinal Cord Injury and Repair
- 444 Novel Cell Lines for Spinal Cord Transplantation
- 444 Repair of Injured Nervous Tissue with Foreign Grafts
- 445 Muscle Function Recovery After Peripheral Nerve
 Injury Enhanced by Chronic Direct Current Stimulation

XVI. Wheelchairs and Powered Vehicles

A. General

- 446 Adaptation of Wheelchair Standards for VA Policy and Purchasing Requirements
- 447 Comparative Study of 19 Wheelchairs
- 447 Costs and Benefits Associated with Limiting Deep Discharge of Wheelchair Batteries
- 448 International Wheelchair Standards: A Study of Costs and Benefits
- Toward Further Development of a Modular Wheelchair Tray for the Physically Disabled
- 450 Ergonomics of Manual Wheelchair Propulsion
- **450** Functional Assessment of the Performance Capacity of the Wheelchair-User Combination in the Course of Rehabilitation
- 451 Wheelchair Evaluation
- 451 Rehabilitation Engineering Center for Personal Licensed Transportation for Disabled Persons
- 452 Research on Improving Wheelchair Frame Durability

- 453 A Wheelchair for Exercising Paralyzed or Paretic Limbs of Paraplegics
- 454 An Italian Consumer Survey of Wheelchairs
- 454 Investigations into the Influence of Wheel Position on the Propulsion Capabilities of Wheelchair Users
- 455 Comparative Evaluation of Chargers for Wheelchair Gel Cell Batteries

B. Powered Controllers

- 456 Linear Synchronous Motors for Power Wheelchairs
- 457 Ultrasonic Head-Controlled Wheelchair and Interface
- **458** Electric Wheelchair Controllers: Effect of Speed and Acceleration on Driving Performance
- 458 Isometric Joystick versus Displacement Joystick for Simulated Wheelchair Control
- 459 Evaluation of the MANUS Wheelchair-Mounted
 Manipulator in the Home, Work, and School
 Environment
- 460 Adaptive Speed Control for Electric Wheelchairs
- 460 An Improved DC-DC Converter
- 460 Brushless DC Motor Evaluation
- 461 Reliable, Available, and Safe Electric Wheelchairs
- 461 Research on Wheelchair Frame Modeling
- 463 The MIT Damped Joystick: A Control Interface for Tremor-Disabled People
- 463 Development of a Smart Wheelchair
- 464 Identification of Desirable Features of a Smart Wheelchair
- 465 Further Development and Clinical Testing of a
 Multifunction Vehicular Interface Unit for
 Quadriplegic Drivers
- 466 Effects of Flexible Passive Standing in Patients with Spinal Cord Injuries

C. Seating Systems

- 467 Computerized Shape Reproduction for Custom Contoured Wheelchair Seating Systems
- 468 Development and Clinical Evaluation of an Adjustable Modular Postural Seating System for Persons with Mild to Severe Physical Involvement
- 469 Toward Development of a System for Safely Transporting
 Physically Disabled Children in Passenger Cars
- 469 Functional and Clinical Evaluation of the Short- and Long-Term Effects of Anteriorly Tipped Seating in Children with Cerebral Palsy
- 470 Development and Evaluation of an Advanced Pressure-Mapping System for Prescription of Seating Wheelchair and Positioning Systems
- 471 Research and Development to Improve Seating Design
- 473 Research and Development on Assessing Wheelchair Ride Quality
- 473 Development of a Tilting Backrest for Wheelchairs
- 473 Biomechanical Analysis of Wheelchair Propulsion for Various Seating Positions

XVII. Wound and Fracture Healing

A. Pressure Sores

- 475 Electrical Muscle Stimulation for the Prevention of Pressure Sores
- 476 Enhancement of Wound Healing Using Synthetic Skin, Electric Stimulation and Hyberbaric Oxygen Therapy
- 477 Identification and Evaluation of a Comprehensive Skin
 Care Program to Prevent Skin Breakdown in Spinal
 Cord Injured Patients
- 477 Treatment of Pressure Ulcers
- 478 Use of Direct Current Stimulation in Pressure Sore Healing
- 479 Therapeutic Intervention for Healing Pressure Sores with Electrical Stimulation on Persons with Spinal Discontinuities
- 480 An Analytical Service Demonstration of the Role of Biochemical and Behavioral Indicators in the Prevention of Recurrent Pressure Sores
- 480 Pressure Sore Prevention: An Effective Stepped Care Approach
- 481 Bedsore Biomechanics

B. Fracture Healing

- 482 Enhancement of Union of Segmental Defect Fractures II
- 483 Periosteum as a Functional Membrane
- 483 Enhancement of Femoral Head Fracture Healing by Means of AC and DC Electrical Stimulation
- 484 Biomechanics of External Fixation of Tibial Fractures
- 484 Effect of Acetoazolamide on Fracture Healing

C. Other

- 485 Morphologic and Ultrasonic Analysis of Normal and Ischemic Human Wounds
- **486** Diabetic Foot Ulcers: Quantifying the Effects of Nonsurgical Treatments
- 487 Bone-Derived Cells Produce a Chemotactic Factor

XVIII. Miscellaneous

- 488 Development of a DHCP Database and Quality
 Assurance Information System for Audiology and
 Speech Pathology: A Pilot Study
- 488 National Invitational Conference on the Development of a Health Services Research Capacity in Physical Disability and Rehabilitation
- 489 A Model for the Production of Low Demand Assistive Devices
- 489 Health Insurance Coverage of Disability Beneficiaries