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Rehabilitation R&D Progress Reports is distributed as number one each year of the *Journal of Rehabilitation Research and Development*. 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 current research and the clinical application of its results.

At present, the *Journal* and the progress report annual publication are distributed free of charge, both in the United States and in foreign countries. Additions will be made to the mailing list upon request.

Editor's Note

Rehabilitation R&D Progress Reports 1987 is the fifth annual compilation of ongoing work in the field of rehabilitation research and engineering both in this country and abroad. Our goal of increasingly comprehensive coverage in each annual edition has been achieved once again. Moreover, authors have expanded their reporting of publications and patents resulting from completed research.

Several other changes and new features are included in this year's edition: the organization of progress reports under subject headings has been improved and a new subject index is included.

A true picture of progress in rehabilitation requires a broader perspective than that provided by a description of individual projects alone. This year, as a start toward reporting a broader perspective, sponsoring agencies were asked to provide information on their overall rehabilitation R&D strategies and priorities. Selected results are presented as a part of the Sponsor Index.

The availability of funds is clearly a part of the broader perspective which relates to current and future rehabilitation R&D progress. This year, as a start toward annual coverage of funding, a new section presenting a selected listing of agencies that fund rehabilitation R&D has been added. Hopefully, this information will assist researchers in locating additional support for their work.

Perhaps most significantly, *Rehabilitation R&D Progress Reports* are now online (see inside front cover) on the VA Rehabilitation Database and will be maintained on an ongoing basis. Thus, a researcher can report progress (including "breakthroughs") and within days have his or her report available to other scientists and over 300,000 system users. Ongoing reports will allow users to get a more current picture of activity and progress in rehabilitation R&D than an annual publication alone can provide. An annual hard copy report will continue to be published in January of each year and will be derived from the progress reports contained in the VA Rehabilitation Database.

The deadline for submission for inclusion in the next annual edition is September 1, 1988. Guidelines for submitting progress reports are listed on page ii.

Seldon P. Todd, Jr.

Electronic Publishing: A Technical Note

The organization and preparation of this publication was done on a database specifically designed for the production of the progress reports and the indexes. The programs used were dBase III+ (Ver 1.1) and the Norton Editor (Ver 1.3B). The operating system was IBM PC DOS (Ver 3.2) and hardware consisted of IBM PCs, XTs, ATs, and Compaq 386s. The database structure was designed by John Bowman, Chief, Technical Support. Another specially designed program, using Microsoft Quickbasic (Ver 3.0), needed in the final preparation phase of the text files was written by John J. Martin, VA Medical Center, Washington, D.C.

All heading and subheading titles have been highlighted in blue to illustrate their purpose as links. Please click on the links to be taken to the section you are looking for.

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- 461 Section II. *SPONSOR PROGRAM SUMMARIES WITH INDEX TO PROGRESS REPORTS***
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ON THE COVER

The UNISTIK hand vehicle controller, which represents the results of a VA/NASA Interagency Agreement carried out under the sponsorship of the VA Rehabilitation Research and Development Service. Based on the design of the NASA Lunar Rover controller, the UNISTIK device allows severely disabled individuals to drive conventional vehicles. Engineering safety and reliability testing have been completed and clinical testing is under way. A progress report on the UNISTIK device is on page 144. Photographs: Courtesy of the Spinal Cord Injury Service, VA Medical Center, Seattle, WA. Cover design by Holly M. Jellison.

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- 249 Prospective Study of Factors in Back Pain
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- 250 Regaining Functional Abilities after Hip Fracture
- 251 Gross Motor Attainments in Eleven to Fourteen-
Year-Old Children with Down's Syndrome
- 251 Orthokinetic Orthoses: Clinical Efficacy Study in
Non-Drug Analgesia of Post-Trauma Chronic
Pain
- 253 The Quantitative Assessment of Knee Orthoses
for Control of Ligamentous Instability
- 253 A Survey of the Current Clinical Use of Gait
Analysis in the UK
- 254 Anterior versus Posterior Walkers for Children
with Cerebral Palsy: A Gait Analysis Study

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A. Bone and Joint Studies

- 255 Relation of Computerized Axial Tomography
(CAT) Scan Mineral Density to Mechanical
Properties of Vertebrae
- 256 Prediction of Trabecular Bone Strength and
Modulus by Computerized Axial Tomography
(CAT)
- 256 Biomechanical Modeling of the Lower Back
- 257 Dynamic Biomechanics of Spinal Implants
- 258 Pathokinesiology of Anterior Cruciate Ligament
Deficiency
- 259 Effect of Ligamentous Instability on Knee Joint
Proprioception
- 259 Study of Bone Structural Response to Altered
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- 260 Bone In Vivo and In Vitro Stress and Strain
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- 261 Biomechanical Testing of Spinal Instrumentation
Systems
- 261 Evaluation of the Slide Board Exercise for
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- 262 Biomechanical Testing of a New Anterior
Construct for Segmental Spinal Fusion
- 263 Knee Biomechanics of Athletes with High Risk
Exposure to ACL Injury
- 263 Biomechanics and Electromyography of Anterior
Cruciate Ligament (ACL)-Deficient Knees
- 263 Quantification of Mobility Performance for
Functional Assessment, Diagnosis, and
Therapy of Neuromuscular, Skeletal, and
Synovial Joint Dysfunctions
- 266 Segmental Bone and Joint Replacement after
Tumor Resection

- 267 Biomechanics of Metastatic Defects in Bone
- 267 A Comprehensive, Quantitative, Predictive Model of the Human Knee Joint
- 268 Biomechanics of Joint Motion
- 269 Kinematics of the Ankle and Subtalar Joint
- 269 Ground Reaction Torque and Subtalar Joint Function
- 270 Biomechanical Evaluation of the Patellofemoral Joint Under Various Degrees of Fixed Rotational Deformities of the Femur

B. Human Locomotion and Gait Training

- 271 WATRACK—A New System for Studying Movement
- 271 Development of a Posture Sensor and Sensory Biofeedback System for Use in Gait Training of the Locomotion Disabled
- 272 Measurements of Postural Sway
- 272 A Model for Postural Sway
- 273 The Clinical Application of Gait Analysis
- 273 The Effects of Proximal Tibial Osteotomy and Tibial Tubercle Elevation on Knee and Ankle Joint Loading
- 274 Quantitative Measures for Assessing Therapeutic Effectiveness
- 275 A Telemetric Data Acquisition and Processing System for Biofeedback Training and as a Diagnostic for Human Movement Training
- 276 Feasibility Study: Evaluation of Total Knee Replacement by Gait Analysis
- 277 A Clinical Gait Recording System
- 277 Gait Abnormalities in Hemiplegia: Their Correction by Ankle-Foot Orthoses

C. Other

- 278 Optimal Biomechanical Design/Development of Arm-Powered Mobility Devices
- 279 Biofeedback System for Postoperative Hand Rehabilitation
- 279 Dynamic Positional and Electromyographic Monitoring of Sitting Posture
- 280 Mechanics of Rising from the Seated Position
- 280 A New Approach to Muscle Training to Rehabilitate the Hand in Leprosy
- 281 Comparison of Floor Sitting and Wedge Kneeler: Their Effect on Posture and Upper Extremity Range of Motion in Children with Cerebral Palsy
- 282 Design of Instrumentation to Quantify Upper Extremity Motor Control of Children with Cerebral Palsy: Pilot Study

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- 283 Stress Analysis of Internal Fracture Fixation of Long Bones
- 284 Testing of Design Parameters for a Prototype Piezoelectric Internal Fixation Plate

- 285 Synthetic Bone Graft Materials in Segmental Defect Fractures
- 286 Noninvasive Assessment of Fracture Healing
- 287 Enhancement of Wound Healing, Using Synthetic Skin, Electrical Stimulation and Hyperbaric Oxygen Therapy
- 288 Circulatory and Mechanical Response of Skin to Compression Loading
- 289 Morphologic and Ultrasonic Analysis of Normal and Ischemic Human Wounds
- 290 Altered Collagen and Wound Metabolism in Non-Healing Diabetic Ulcers
- 291 Edinburgh Unilateral External Fracture Fixation Device
- 291 Enhancement of Ulcerated Tissue Healing by Electrical Stimulation
- 292 Acceleration of Fracture Healing by Electrical Fields
- 292 A Study on Disintegration of Carpal Bones in Leprosy
- 293 Graded Weightbearing in Tarsal Disintegration in Leprosy

XI. Muscles, Ligaments, and Tendons

A. General Properties of Muscle

- 295 Decomposition Analysis of the Surface Electromyogram
- 296 Automatic Decomposition of the Electromyogram
- 297 The Myoelectric Signal Decomposition Technique
- 297 Surface Electrode Design
- 298 Myoelectric Signal Quality Analyzer
- 298 The Frequency Response of Skeletal Muscles: Dependence on Control Strategies and Fiber Types
- 299 Skeletal Muscle Reaction to Immobilization

B. Muscle Contraction

- 299 Decomposition of Surface-Detected Myoelectric Signals
- 300 Muscle Force Output During Voluntary Contractions
- 300 Cross-Talk Between Myoelectric Signals of Adjacent Muscles
- 301 Synchronization of Motor Unit Discharges
- 302 The Common-Drive Principle of Motor Unit Control
- 302 Exercise-Induced Adaptations of Skeletal Muscle Grafts
- 303 Motor Control in Subjects with Clinical Disorders

C. Muscle Fatigue

- 303 Muscle Fatigue and Back Pain
- 304 Muscle Fatigue and Respiratory Failure
- 305 Muscle Fatigue and Myoelectric Signal
- 305 Muscle Fatigue Monitor

- 306 Motor Unit Properties Investigated by Voluntary and Electrically Elicited Contractions

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- 306 Structural and Functional Properties of Normal and Healing Ligaments
- 307 Structural and Functional Properties of Normal and Healing Ligaments (Project Extension)

XII. Neurological/Vascular Disorders

A. General

- 309 Electrophysiological Studies on Nerve Repair and Regeneration
- 310 Nerve Coupler: Sutureless Peripheral Nerve Repair at the Fascicular Level
- 310 Factors Limiting the Tactile Perception of Form
- 311 Neural Pathways Involved in Tactile Discrimination
- 311 A New Approach in the Relief of Pain of Leprous Neuritis
- 312 Treatment of Leprous Neuritis by Perineurial Steroid Injection
- 313 Inhibitive Casting as an Adjunct to Therapy in Children with Cerebral Palsy

B. Arthritis

- 314 Evaluation of Osteoporosis by Ultrasound and CAT-Scan
- 315 Arthritis Rehabilitation Unit
- 315 Impact of Arthritis Self-Care for Rural Persons
- 316 Endurance Training with Management of Fatigue in Rheumatic Arthritis and Systemic Lupus Erythematosus
- 317 Multipurpose Arthritis Center: Community Component—Coping Responses to Rheumatoid Arthritis
- 317 General Clinical Research Center: "Riadura" and NSAID in Rheumatoid Arthritis Treatment
- 317 Multipurpose Arthritis Center: Professional Education in Sexual Rehabilitation of Arthritis Patients
- 318 Multipurpose Arthritis Center: Education Component—Arthritis Patient Education Model
- 319 A National Arthritis Data Source (ARAMIS)
- 319 Multipurpose Arthritis Center: Stanford, CA
- 320 Northeast Ohio Arthritis Center Support: Legal Aspects of Chronic Illness: A Study of Arthritis Patients
- 321 Multipurpose Arthritis Center: Community Component—Arthritis Impact Measurement Scales
- 321 Occupational Role Dysfunction in Illness: Comparisons with Normative Data
- 322 Multipurpose Arthritis Center: Problem-Oriented Educational Program for Arthritis Using Aerobic-Type Exercise

- 322 Study of Behavioral Aspects of Rheumatoid Arthritis
- 323 UCSF Multipurpose Arthritis Center: Community Component—Studies Using a Panel of Rheumatoid Arthritis Patients
- 324 Benefit and Cost Comparison Between a Coordinated Team Care Approach and a Traditional Office Based Approach to Outpatient Management of Rheumatoid Arthritis

C. Low Back Pain

- 325 Myoelectric Analysis of Human Spine Function: Myoelectric Measurement of Human Muscle Endurance
- 326 Evaluation of Psychophysiological Ways to Assess Chronic Low Back Pain
- 326 Low Back Pain Studies

D. Vascular Disorders

- 327 Blood Velocity and Spectra Estimations from Doppler Ultrasound
- 328 A Program for Evaluating the Dysvascular Patient
- 330 A Program for Evaluating the Dysvascular Patient (Project Extension)
- 331 Evaluation of Pressures Applied by Elastic Dressings
- 332 Postoperative Thromboembolism in Surgical Patients
- 332 Characterizing Atherosclerotic Lesions by Proton Spectroscopy

XIII. Head Trauma and Stroke

- 334 The Application of Microcomputers for the Treatment of Aphasic Adults
- 335 Biomechanical Measurements for Quantitative Assessment and Diagnosis of Dysphagia
- 336 Long-Term Effects of Topical Anesthesia in Stroke Patients: Measurement and Analysis of Neurophysiological Reflexes
- 337 Development and Evaluation of a Videotape Teaching Module for Nursing Students in the Clinical Setting
- 337 Computer-Aided Device Evaluation
- 338 Early Intervention with Globally Aphasic Stroke Patients Using a Computerized Visual Communication Technique
- 339 Stroke Clinical Center Grant: Remediation of Left-Sided Neglect
- 339 Treatment of Affective Deficits in Stroke Rehabilitation
- 340 Rehabilitative Software for Head Trauma Victims
- 340 Subthreshold Memory Phenomena
- 341 Precursors of Stroke Incidence and Prognosis
- 341 Sensorimotor Interactions in Motor Unit Control
- 342 Medication Effects on Attention and Arousal

XIV. Geriatrics

- 343 Age-Related Changes in Sensorimotor Performance
- 344 Efficacy of Injectable Collagen to Correct Glottal Insufficiency
- 345 Geriatric Prosthetics: Design and Development of an Improved Above-Knee Socket (Project Extension)
- 346 Electromyographic Incontinence Alert Device
- 346 Non-Auditory Factors Affecting Hearing Aid Use in Elderly Veterans
- 347 Integrated System for the Management of Wandering Behavior in the Memory-Impaired Elderly: An Interagency Report
- 348 Work Disability, Disability Management, and the Older Worker
- 349 Perceptual Retention and Age
- 349 Geriatric Medicine Academic Award
- 350 Studies in Idiopathic Normal Pressure Hydrocephalus
- 350 Respite Care for Older Adults: A Prototype
- 351 Epidemiology of Cardiovascular Diseases in the Elderly
- 351 Does Improvement in Mortality Mean Better Health?
- 352 The Community Adaptation of Mildly Retarded Persons: The Lives and Needs of Aging Mentally Retarded Persons
- 352 Learned Modification of Visceral Function in Man
- 352 Senile Dementia: Natural History
- 353 Geriatric Medicine Academic Award
- 353 Falls in the Elderly: Causes and Reduction
- 354 Improving Recovery from Cardiac Surgery
- 354 Cancer Control Science Program: Fox Chase Cancer Center: Cancer Education and Management for Patients
- 355 The Treatment of Acute Illness in Nursing Homes
- 355 Research in Mental Retardation: Elderly Mentally Retarded—Population Description and Service Needs
- 356 Older ESRD Patients: Rehabilitation and Quality of Life
- 357 Illness Cognition and Coping in the Elderly
- 357 Profile of Visual Function in Low Vision Patients
- 358 The Behavioral Context of Incontinence in the Elderly
- 358 Teaching Nursing Home: Modification of Exercise Capacity in the Elderly
- 359 Geriatric Medicine Academic Award
- 359 Geriatric Dentistry Academic Award
- 360 Cutaneous Mechanoreceptor System
- 360 Morbidity Risk Assessment in the Elderly
- 361 Cooperative Group Outreach Program (ECOG)
- 361 Assessment of the Spatial and Temporal Characteristics of Vision as a Function of Age
- 362 Environmental Influences on Behavior of Patients with Alzheimer's Disease

XV. Sensory Aids**A. Blindness and Low Vision****1. General**

- 363 The Use of the Electroretinogram to Predict Retinal Cell Activity
- 363 Pupillary Function in Elderly Individuals with Impaired Night Driving Vision
- 364 Predicting the Visual Abilities of Partially Sighted Persons
- 365 Hearing Impaired Blind Veterans
- 365 A Voice-Output Questionnaire Administrator
- 367 The Physical Correlates of Tactual Perception
- 368 Model-Based Image Enhancement for the Visually Impaired
- 368 Functional Vision and Clinical Tests in Low Vision
- 369 Sonar Sensory Substitution—Spatial Behavior in the Blind
- 369 Electronic Braille Page Output Device Using Nitinol SMA
- 370 Psychophysics of Reading—Normal and Low Vision
- 370 Analysis of Navigation Without Sight
- 371 Profile of Visual Function in Low Vision Patients
- 371 Prediction of Symbol Recognition in Low Vision Patients
- 372 Low Vision Reading: Optimizing Visuo-Motor Performance
- 372 Visual Tests for Patients with Central Scotoma
- 373 Expansion and Enhancement of the National Blindness and Low Vision Database
- 373 An Optimal, Inexpensive Text Entry System for the Orthopedically and Neurologically Disabled
- 374 Time Use and Resource Allocations of People with Visual Disabilities: Assessment Instrumentation
- 375 Development and Validation of a Work Environment Visual Demands (WEVD) Protocol
- 375 A Robotic Hand Communication Aid for the Deaf-Blind
- 377 The Evaluation of Low Vision Aids and Prediction of Visual Performance
- 378 Sensory Aid Technology: A Career Development Intervention Strategy for Blind and Visually Impaired Persons
- 379 Learning Styles and Effective Teaching Technologies for Enhancing the Employment of Deaf-Blind Youth
- 380 Identification of Job Tasks and Management Practices Performed by Blind and Visually Impaired Persons in the Operation of the Business Enterprise Program
- 380 Identification of Work Assessment Technology Needs
- 381 Identification and Classification of the Career Transition Problems of Blind and Visually

- Impaired Persons Employed as Professionals, Managers, or Technicians
- 381 Modification and Adaptation of the Vocational Education Readiness Test for Blind/Severely Visually Impaired Individuals
- 382 Cutaneous Pattern Perception
- 382 Normative Data for Assessing the Manual Dexterity of Visually Handicapped Adults in Vocational Rehabilitation
- 383 Sensory Aids for the Blind and Visually Impaired
- 383 An Improved Volatile Braille Display
- 383 Universal Job Instrumentation System
- 384 Specialized Vocational Aids and Devices
- 385 The Note-a-Braille
- 385 Dotless Braille Reader
- 386 Dexter: A Mechanical Hand for the Deaf-Blind
- 387 Pediatric Research
- 387 Applications of Evoked Potential in Rehabilitation
- 388 Automatic Lens Focusing for the Visually Impaired

A. Blindness and Low Vision

2. Mobility Aids

- 389 Evaluation of Electronic Travel Aids (ETAs) for Visually Impaired Individuals
- 389 Clinical Application Study of Training Techniques and Devices for the Blind
- 390 Measuring the Mobility of Blind Travelers
- 391 Measuring the Spatial Layout Knowledge of Visually Impaired Adults
- 392 Digital Techniques for Objective Analysis of Aural Acoustic Immittance
- 392 Establishing Design/Operational Features for Portable Blind Reading Aids
- 393 A Portable Navigational Aid for Blind Persons

A. Blindness and Low Vision

3. Reading Aids

- 394 Computer Vision to Guide the Blind
- 395 The Human Factors Design of a Large Print Display
- 396 Adaptation of the Amiga Personal Computer to the Visually-Impaired User
- 397 Braille Teaching Aid with Synthetic Speech
- 397 Enhancing the Reading Skills of Low Vision Individuals with Macular Loss
- 398 Software Development: Blissbook

B. Deafness and Hearing Impairment

- 399 Electroacoustical and Clinical Protocols for Evaluating Assistive Listening Devices
- 399 Development of a Digital Hearing Aid and Computer-Based Fitting Procedure: Phase II
- 401 Perception of Reverberation by the Hearing Impaired
- 401 Direct Measurement of Loudness Recruitment in Hearing-Impaired Veterans

- 402 Direct Measurement of Loudness Recruitment in Hearing-Impaired Veterans (Project Extension)
- 403 Rabbit ERG Responses to White-Noise Modulated Stimuli
- 404 Development of Materials for Computer-Assisted Instruction in Lipreading
- 405 Personal Computer System for Acoustic Measurements
- 406 Threshold Sound Pressure Levels (SPLs) for the ER-3A Insert Earphone
- 406 Effects of Manipulation of the Impedance of the Ear of Normal Subjects on Selected Indices of Auditory Function
- 408 Voice and Speech Findings in Prospective Cochlear Implant Candidates
- 409 Basic Mechanisms and Rehabilitative Strategies for Presbycusis
- 409 Changes in Frequency Organization of the Cochlea During Aging
- 410 An Auditory Prosthesis for Sensorineural Hearing Loss
- 411 Transition Study of Persons with Hearing Impairments
- 412 Technology for Sensory Devices for Deaf and Severely Hard of Hearing People
- 413 Project PALS (Places with Assistive Listening Systems)
- 414 AKL Spatiotemporal Representation in a Tactile Aid for the Deaf
- 414 Speech Perception Studies—Bimodal and Developmental
- 415 Tactile Communication of Speech
- 415 Cutaneous Communication Aids for the Deaf
- 416 Rehabilitation Strategies for the Hearing Impaired
- 416 Reading and Writing Skills in the Congenitally Deaf
- 416 Factors Predictive of Reading and Writing Skills in the Congenitally Deaf
- 417 Development of a Wearable Vibrotactile Aid—Phase II
- 417 The Role of the Haptic System in Communication
- 418 Development of a Cochlear Prosthesis
- 418 Wearable Multipoint Opto-Tactile Transducer for the Deaf or Blind
- 418 Basic and Applied Studies of Tactile Perception

C. Speech Impairment

1. Hearing Related

- 419 Measurement and Prediction of Benefit from Amplification
- 420 Computerized Treatment of Acquired Reading Disorders: Treatment of Alexia and Agraphia
- 421 Acoustic Vowel Measures Following Radiation Therapy to the Larynx
- 421 Language Performance in Cleft Palate Adolescents
- 422 The Use of Microcomputers in Diagnosis and Rehabilitation of Adult Aphasic Individuals

- 423 The Acquisition of Morphological Processes in American Sign Language (ASL)
- 423 Electrically Controlled Talking Tracheostomy Systems
- 424 Speech Transmission Laboratory Reports
- 425 Nonlinear Interaction in Voice Production
- 425 Glottal Source—Vocal Tract Acoustic Interaction
- 425 Speech Technology for the Visually Impaired: The Swedish Perspective
- 425 Relationship Between Changes in Voice Pitch and Loudness
- 426 Long-Term-Average Spectrum Analysis of Phonatory Effects of Noise and Filtered Auditory Feedback
- 426 Some Effects of Cochlear Implantation on Speech Production

C. Speech Impairment

2. Aphasia

- 427 Promoting Generalized Language Use: An Analysis of Treatment Strategies
- 428 An Experimental Analysis of Response Elaboration Training in Aphasia
- 428 Drawing: Its Use as a Communicative Aid with Aphasic and Normal Adults
- 429 Computer-Aided Visual Communication for Severely Impaired Aphasics
- 431 Technology Applications for Aphasia Rehabilitation: Lessons from Sweden, Poland, and The Netherlands
- 432 Efficacy of Remote Treatment of Aphasia by TEL-Communicology
- 433 The Influence of Mode of Stimulation on Naming Performance in Aphasia
- 434 Recovery from Aphasia in Stroke
- 434 Communication in Aphasia and Other Organic Disorders
- 435 Reorganization of Brain Function in Recovery from Aphasia

C. Speech Impairment

3. Other

- 436 Effects of Real-Time Biofeedback on Dysarthric Speech
- 436 Perceptual and Acoustical Characteristics of Tracheoesophageal Voice
- 437 Transparent Access to Sources of Computer-Based Information
- 438 Neuropathophysiology of Speech Motor Impairments
- 439 Structure and Acquisition of American Sign Language

XVI. Miscellaneous

- 440 Report on Phase I and Phase II: An Epidemiological Assessment of Disabled

- Veterans in Guam, American Samoa, and Hawaii
- 441 A Pilot Study on the Efficacy of Injected Cross-Linked Collagen in the Treatment of Symptomatic Glottic Insufficiency
- 441 Augmentative Communication for Intensive Care Unit Patients
- 442 Artificial Intelligence Strategies for Orthopedic Clinical Decision Making
- 443 Evaluation of One-Way Air Flow Valve Prostheses in Decannulation Procedures for Chronic Tracheotomized Patients
- 443 Psychiatric Rehabilitation in Nursing Homes
- 444 Assessment of the Swallow Reflex in Patients with Dysphagia
- 445 Dissemination of Rehabilitation Technologies
- 446 Rehabilitation of Neurogenic Communication Disorders in Remote Settings
- 447 The Relationship Between Visual Perception and Social Perception in Cerebral Palsied Children
- 447 Understanding Spasticity and the Effects of Rhizotomy Surgery
- 448 Design and Validation of a Subject/Instrument Interface to Allow Collection of Selected Pulmonary Function and Selected Metabolic Measures of Children with Cerebral Palsy
- 449 Protective Headwear for Disabled Children
- 449 Monitoring Respiratory Patterns and Their Coordination with Swallowing in Cerebral Palsy
- 450 Effects of Relaxed Breathing and Biofeedback on Bronchospasm in Chronic Asthma
- 451 The Finance of Medical Rehabilitation Services: Interim Report on the Mary E. Switzer Distinguished Research Fellowship in Medical Rehabilitation Finance
- 452 Information Dissemination in Communication, Control and Computer Access
- 453 Industry-Based Employee Assistance Program
- 454 Uses and Potential Uses of Information Technology by Rehabilitation Agencies
- 455 Disability Management and Rehabilitation: An Analysis of Programs, Costs and Outcomes
- 456 Epidemiological Study of Pain
- 457 A Neurosensory Interdisciplinary Research Program: Tactile Stimulator Development
- 457 Development of a Data Management System for the Family Asthma Rehabilitation Program (FARP)
- 458 An Innovative Approach to Continuing Health Care Education
- 458 Assessing the Need for Management of the Neurogenic Bowel in the Pediatric Population
- 459 Longitudinal Study of Public Expenditures for Services to the Handicapped