

## Research in the New Millennium

**Improving Muscular Use and Cardio-Respiratory Demand in Spinal-Cord-Injured Patients Performing Functional Electronically Stimulated Leg Cycle Ergometry**, *University of California - Davis (H133G020137)* led by Maury Hull, PhD. Kristi E. Wilson, PhD, Project Officer.

Abstract: This project develops new stimulation patterns for a functional electrically stimulated (FES) leg cycle ergometer that enable persons with spinal cord injuries to exercise with greater benefit. Greater benefit is defined as exercising for a longer period of time and at a higher work rate while involving more leg muscles than is possible with existing ergometers

**Cardiovascular Disease in Women with Spinal Cord Injury and Its Effect on Participation in Community Activities**, *Los Amigos Research and Education Institute, Inc. (LAREI) (H133G010160)* led by Yaga Szlachcic, MD. Kristi E. Wilson, PhD, Project Officer.

Abstract: The goals of this project are: (1) to profile cardiovascular disease (CVD) risk factors in women with SCI, (2) to assess the relationships between CVD risk factors and "observable" CVD in this group, (3) to assess the associations of CVD risk factors and observable CVD with quality of life and with participation in community activities among women with SCI, (4) to evaluate standard interventions for lipid abnormalities and CVD in women with SCI, and (5) to assess the impact lipid and CVD interventions have on the quality of life and community activity participation of women with SCI. Find out more at: [www.agingwithsci.org/research.htm](http://www.agingwithsci.org/research.htm)

**Pharmacological Management of Dyslipidemia and Cardiovascular Disease in Persons with Chronic Cervical SCI: A Multicenter Collaborative Trial**, *University of Miami (H133A011115)* led by Mark S. Nash, PhD. Theresa San Agustin, MD, Project Officer.

Abstract: This project researches strategies that reduce cardiovascular disease risks after onset of tetraplegia by increasing high-density lipoprotein cholesterol (HDL-C) levels. The research examines the ability of a pharmaceutical therapy to improve the lipid profiles and forestall cardiovascular disease progression in persons with tetraplegia. Previous research on persons without SCI has shown extended-release niacin effective for elevating HDL-C, lowering total cholesterol, lowering low-density lipoprotein cholesterol (LDL-C), lowering triglycerides, slowing cardiovascular disease progression, and reducing cardiovascular morbidity and mortality. The ability of this drug to improve lipid profiles has never been examined in persons with tetraplegia, although drug benefits similar to those reported in persons without SCI would be of great health benefit to those with tetraplegia.

Find out more at: [www.miamiproject.miami.edu/](http://www.miamiproject.miami.edu/)

The American Heart Association's Health Tools include a risk assessment tool, activity guides, and patient information sheets. Find out more at [www.americanheart.org](http://www.americanheart.org)

**Rehabilitation Engineering Research Center on Recreational Technologies and Exercise Physiology Benefiting Persons with Disabilities (RERC Rec-Tec)** *University of Illinois at Chicago (H133E020715)* led by James H. Rimmer, PhD. William Peterson, Project Officer.

Abstract: This program researches access to recreational opportunities and physical endurance of people with disabilities, targeting four primary areas: (1) increased access to fitness and recreation environments, (2) interventions to increase physical activity and recreation participation, (3) adherence strategies to reduce physical activity relapse and dropout rates, and (4) randomized clinical trials to evaluate improvements in health and function. Two training projects promote capacity building for future recreation, fitness, exercise physiology, engineering, and rehabilitation professionals, and two additional training projects support professional development. Find out more at: [www.ncpad.org/news/RERCRecTech.htm](http://www.ncpad.org/news/RERCRecTech.htm)

**Secondary Prevention Trial of Exercise and Diet for Improvement of Physical Fitness, Independence, and Overall**

**Health in Adult Paraplegics**, *University of*

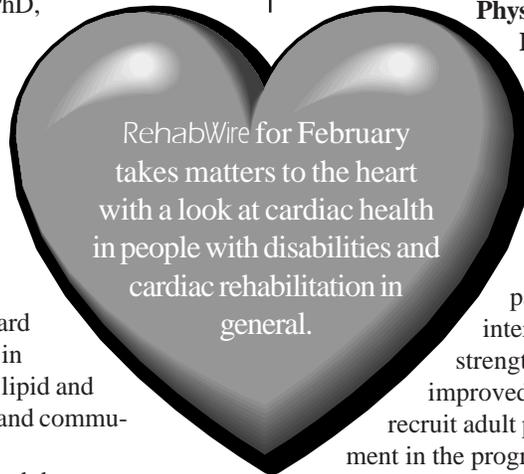
*Illinois/Chicago (H133G990143)* led by Carol Braunschweig, PhD. Theresa San Agustin, MD, Project Officer.

Abstract: This project investigates the impact of an exercise intervention coupled with nutrition education on the strength and fitness of a sample of overweight paraplegics with chronic illnesses. This intervention improves cardiovascular fitness and strength leading to improved independence and improved overall health. The research objectives are to recruit adult paraplegics with chronic disease for involvement in the program and then to compare the effects of the program on physical fitness in participants who have completed the program to physical fitness in those participants randomized but waiting, during the same 12 weeks, to begin the intervention. The impact of the program is assessed using changes in strength and body composition, levels of independence, dietary knowledge and intakes, blood pressure, the total-to-high-density lipoprotein cholesterol ratio, bone mineral density, and fasting glucose concentrations.

Find out more at: [www.uic.edu/orgs/sci-adapt/](http://www.uic.edu/orgs/sci-adapt/)

**Functional Assessment and Treatment of Neurogenic Hypotension Due to Spinal Cord Injury**, *Rehabilitation Institute of Michigan (H133G020128)* led by Edward Nieshoff, MD. Constance Pledger, EdD, Project Officer.

Abstract: This project characterizes hypotensive phenomena associated with SCI and evaluates the effects of midodrine, an alpha-sympathomimetic medication, on them. Specifically, cardiovascular autonomic insufficiency due to SCI is manifested by (1) orthostatic hypotension, which impedes early rehabilitation efforts and causes subjective distress, and (2) exertional hypotension, which contributes to pathological fatigue and limited exercise performance. Ability to tolerate head-up tilt is assessed by heart rate, blood pressure, and symptoms during inclination; exercise tolerance is evaluated by oxygen consumption and perceived exertion in addition to the latter. This project is the first controlled trial of midodrine in SCI.



## Selections from REHABDATA

Glazer, K. M., Emery, C. F., Frid, D. J., Banyasz, R. E. (2002) **Psychological predictors of adherence and outcomes among patients in cardiac rehabilitation.** *Journal of Cardiopulmonary Rehabilitation*, 22(1), 40-46. Accession Number: J43807

Abstract: Study evaluates the effects of optimism, depression, and neuroticism on adherence and outcomes among patients in cardiac rehabilitation. Participants included 46 patients with coronary heart disease (CHD) who completed measures of psychological functioning, physical functioning and CHD knowledge during the first and last week of a 12-week CR program. Results indicate that depression appears to have a significant influence on adherence and improvement, but optimism and neuroticism were not predictors of outcomes.

Ueshima, K., Kamata, H., Kobayashi, N., Kamata, J., Hiramori, K. (2002) **Medically directed home-based exercise using a stepping device with ECG telemetry monitoring in patients with previous myocardial infarction.** *Journal of Cardiopulmonary Rehabilitation*, 22(2), 105-108. Accession Number: J44085.

Abstract: This study examines the effects of a semi-supervised home-based exercise program for patients with previous myocardial infarction. A stepping device with a hydraulic system, along with a computer-based telemetry monitoring system, was provided to ten patients for the exercise sessions. The telemetry system consisted of peripheral devices and a central computer. Patient data were sent to the central



computer through the telephone line once a day. After reviewing the data, physician's instructions to the patient were displayed on the peripheral computer. Results indicate that this home-based system is an effective alternative for patients who are unable to exercise in group programs.

Lewin, R. J. P., Thompson, D. R., Martin, C. R., Stuckey, N., Devlen, J., Michaelson, S., Maguire, P. (2002) **Validation of the cardiovascular limitations and symptoms profile (CLASP) in chronic stable angina.** *Journal of Cardiopulmonary Rehabilitation*, 22(3), 184-191. Accession Number: J44091

Abstract: Study examines the validity of the Cardiovascular Limitations and Symptoms Profile (CLASP) for measuring health-related quality of life and compares its performance with that of other valid measures. Patients were randomized into one of 3 groups: angina management, routine care, and exercise therapy. All patients were assessed with CLASP, along with the Sickness Impact Profile, the Hospital Anxiety and Depression Scale, and the Sleep Problems Questionnaire at baseline and at 10 weeks. Findings indicate that CLASP is a reliable, valid, sensitive measure of health-related quality of life.

Gardner, A. W., Katzel, L. I., Sorkin, J. D., Goldberg, A. P. (2002) **Effects of long-term exercise rehabilitation on claudication distances in patients with peripheral arterial disease: A randomized controlled trial.** *Journal of Cardiopulmonary Rehabilitation*, 22(3), 192-198. Accession Number: J44092.

Abstract: Study investigates whether improvements in physical function and peripheral circulation obtained after 6 months of exercise rehabilitation could be sustained over a subsequent 12-month exercise program in older adults with intermittent claudica-

tion. Thirty-one patients were randomized into the exercise rehabilitation group and 30 into the no exercise, usual care group. Both groups were assessed for initial claudication distance (ICD) and absolute claudication distance (ACD) at baseline, at 6 months, and at 18 months during the study. Major findings of the study were that an 18-month exercise rehabilitation program improved ICD by 189 percent, ACD by 80 percent, walking economy by 11 percent, 6-minute walk distance by 10 percent, physical activity level by 31 percent, and peripheral circulation by up to 30 percent. These changes were similar to those obtained after the first 6 months of the program.

Sansone, G. R., Alba, A., Frengley, J. D. (2002) **Analysis of FIM instrument scores for patients admitted to an inpatient cardiac rehabilitation program.** *Archives of Physical Medicine and Rehabilitation*, 83(4), 506-512. Accession Number: J44216.

Abstract: Article reports on study conducted to determine whether the level of functional independence upon admission to an inpatient cardiac rehabilitation program affects the length of stay (LOS), discharge to home, and improvement in physical function outcomes. The Functional Independence Measure (FIM) instrument was used to divide patients into higher- and lower-functioning groups. Measures collected from each patient were FIM scores on admission and at discharge, the difference between admission and discharge FIM scores, FIM gains per week, rehabilitation LOS, and discharge disposition. Total FIM scores at discharge were significantly higher than those on admission. The median total of FIM gains per week was 7.78 with a stay of 17 days and a home discharge rate of 76 percent. The higher-functioning group had a shorter stay, greater FIM gains per week, and a greater likelihood of discharge to home or community than the lower-functioning group.

Blanchard, C. M., Courneya, K. S., Rodgers, W. M., Daub, B., Knapiak, G. (2002) **Determinants of exercise intention and behavior during and after phase 2 cardiac rehabilitation: An application of the theory of planned behavior.** *Rehabilitation Psychology*, 47(3), 308-325. Accession Number: J44304.

Abstract: Study tests the theory of planned behavior (TPB) during and after Phase 2 cardiac rehabilitation (CR). The theory of planned behavior is designed to predict and explain human behavior related to specific situations. Patients completed a TPB questionnaire that included attitudes, subjective norms, perceived behavioral control (PBC), intentions, and previous exercise behavior. Results indicated that attitude, subjective norm, and PBC explained 38 percent of the variance in exercise intention during Phase 2 CR and 51 percent of the variance 6 to 10 weeks after Phase 2 CR. Regression analysis also revealed that intention explained 22 percent of the variance in exercise adherence during and 23 percent after Phase 2 CR.



### Look Ahead

March is:

National CFS and Fibromyalgia  
Awareness Month  
Mental Retardation Awareness  
Month

Brain Awareness Week (10-16)

Pulmonary Awareness Week (17-21)

American Diabetes Day (25)