a. Specific Aims
The Specific Aims are unchanged from the original application.

b. Studies and Results
This report presents work conducted from April 15, 2004 to March 31, 2005. During this time we completed all testing of all participants. The experimental design has not changed. Minor modifications have been made in the methods based on experience obtained during the collection of preliminary data on patients with Parkinson’s disease.

Regarding the secondary outcome variables, the analysis of single motor unit (SMU) activation is complete. We still use the Cambridge Electronic Design Spike2 analysis software. This is operational in the Movement Analysis Core at Georgia Tech. We have collected information on SMUs from the first dorsal interossei (FDI) and the quadriceps muscle, i.e. vastus lateralis consistent with our overall study design. We continue to use force transducers to monitor voluntary effort during SMU activation. This allows us to study the relationship between force generation and motor unit activation, yet another index of central neural plasticity.

There have been no staff changes during this past year.

c. Significance
The enhancements to the protocol have strengthened the experimental design and are anticipated to increase the power of our methodology to detect changes in central nervous system plasticity that may occur in response to our interventions. If validated, these methods will enhance our ability to further examine the central nervous system effect of these and other CAM interventions.

d. Plans
We plan to continue to analyze the data and prepare the results for manuscript presentation.

e. Human Subjects
We currently follow all rules and regulations of IRB using now a combined Informed Consent between Emory University and Georgia Tech.

f. Publications and Presentation in which T’ai Chi applications to Parkinson’s disease patients was discussed relative to the Emory CAM

Abstracts:
**Publications:**


e. **Project-Generated Resources**

NA
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

NAME
Robert J. Gregor

POSITION TITLE
Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>State University college, Cortland, NY</td>
<td>BSE</td>
<td>1966</td>
<td>Physical Education</td>
</tr>
<tr>
<td>Ball State University, Muncie, IN</td>
<td>M.A.</td>
<td>1970</td>
<td>Physical Education</td>
</tr>
<tr>
<td>Penn State University, University Park, PA</td>
<td>Ph.D.</td>
<td>1976</td>
<td>Biomechanics</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

**RESEARCH AND PROFESSIONAL EXPERIENCE:**
1966-1969 Teacher in the New York State Public School System
1969-1970 Graduate Teaching Assistant, Ball State University
1970-1971 Instructor and Lecturer in Physical Education, Ball State University
1971-1975 Graduate Research Assistant, Penn State University, Biomechanics Laboratory
1975-1982 Assistant Professor, Department of Kinesiology, UCLA
1982-1990 Associate Professor, Department of Kinesiology, UCLA
1990-1992 Professor, Department of Kinesiology, UCLA
1992-1993 Professor, Department of Physiological Science, UCLA
1993-2002 Professor, Department of Health & Performance Sciences, Georgia Tech
1995-Present Adjunct Associate Professor of Physiology, Emory University Medical School
1997-2002 Head, Department of Health & Performance Sciences, Georgia Tech
1997-Present Director, Center for Human Movement Studies, Georgia Tech
1997-2005 Chair, IACUC, Georgia Tech
2002-Present Professor and Chair, School of Applied Physiology, Georgia Tech
2003-Present Adjunct Professor, Department of Rehabilitation Medicine, Emory University Medical School

HONORS, AWARDS, AND ACTIVITIES
Fellow, American College of Sports Medicine
Member, International Olympic Committee (IOC) Medical Commission
Founding Editor-in-Chief, Journal of Applied Biomechanics (1991-97)
Distinguished Alumni, Cortland State University (1992)
President, American Society of Biomechanics (1996-97)

PUBLICATIONS


Wolf, S.L., R. Sattin, M. Kuther, M O’Grady, A. Greenspan and R.J. Gregor Intense Tai Chi Exercise Training and Fall Occurrences in Older, Transitonally Frail Adults: A Randomized Controlled Trial JAGS, December, 2003.


Research Support:

Current Support:
2 P01 HD32571-06A1 2/1/01-1/31/06
NIH/NICHD/NCMRR
Spinal Circuits and the Musculoskeletal Systems
PPG (A. English, PI), Neural Strategies for Movement Control
Focus of this project is the evaluation of the integration of sensory and motor commands in the control of movement.
Role: PI on Project III

AT00089-01 7/1/00 – 6/30/05
NIH/NCAM
CAM in Neurodegenerative Diseases
Center Grant (M. DeLong, PI) Director, Movement Analysis Core
Role: Co-Investigator.

Completed Research Support:
AG 14767 1997-2001
NIH/NIA
Focus of the clinical trial was on an intense Tai Chi exercise training intervention in older adults transitioning to frailty.
Role: Co-Investigator