

# Orthopaedic Section of the APTA

## Grant Program

### Final Report Form

Name of Investigators: Harrington AT, Stackhouse SK, Sweitzer B, McClure P

Title: Infraspinatus Activation in People with and without Rotator Cuff Tendinopathy

#### 1. Summary of accomplishments in the past year:

Subject recruitment and data collection continued over the past year at Arcadia University, while the data collection at Einstein Health System (Dr. Sweitzer's clinical practice) ended due to decreased success with recruitment over the past 2 years. To date, 21 subjects with tendinopathy and 13 control subjects have successfully completed the protocol, two subjects with RCT did not have evaluable data due to a technical error with the testing system and one subject was not included in analyses due to an insufficient pain profile. Recruitment and testing of matched control subjects will be completed in Spring 2017 despite the end of this grant period, and we anticipate submitting an abstract for consideration for CSM 2018, in keeping with the requirements of the grant agreement.

This project supported a successfully funded NIH R01 application (Karduna, McClure - Neurophysiology of Weakness and Exercise in Rotator Cuff Tendinopathy (1R01AR063713-01A1)) which will also lead to improved recruitment based upon infrastructure being developed for multi-study recruitment at Arcadia University and surrounding clinical practices.

#### 2. Provide a one-paragraph summary of results or abstract suitable for posting on the Orthopaedic Section website.

Twenty-one subjects with rotator cuff tendinopathy (RCT) completed infraspinatus voluntary activation (VA) testing procedures resulting in 18 evaluable subjects (mean age  $30 \pm 8$  years). Mean VA across subjects with RCT (for the best (maximal VA) trial for each subject) was  $0.82 \pm 0.27$  for subjects with resisted shoulder external rotation pain  $\leq 3/10$  and  $0.68 \pm 0.16$  for subjects with pain  $> 3/10$  with this resisted motion. Preliminary analyses demonstrate lower VA values for subjects with RCT compared to age and sex-matched control subjects and that there is a potential relationship between VA, shoulder satisfaction, and function (as assessed using the Penn Shoulder Scale). Further matched-control data are needed to complete this analysis with data collection anticipated to be completed by late Spring 2017.

#### 3. Publications and Abstracts: Indicate with an asterisk (\*) those publications supported by Orthopaedic Section funding.

The following presentation was supported by this grant:

\* Harrington AT, Fliss T, Gherardi K, Senese M, Stackhouse S, McClure P. Reliability of Voluntary Activation Testing of the Infraspinatus in Healthy Adults. Presented at the APTA Combined Sections Meeting; San Diego, CA; January 2013- Orthopaedic Section.

Previous and ongoing work in the lab related to the current project:

Publications:

Stackhouse SK, Eisennagel A, Eisennagel J, Lenker H, McClure PW, Sweitzer B. Experimental pain inhibits infraspinatus activation during isometric external rotation. J Shoulder Elbow Surg ; 2013 Apr;22(4):478-84

The following manuscripts are in preparation:

\* Harrington AT, Fliss T, Gherardi K, Senese M, Stackhouse SK, McClure PW. Reliability of voluntary activation testing of the infraspinatus in healthy adults.

\* Harrington AT, Muth S, Shah K, Stackhouse SK, Sweitzer B, McClure PW. Voluntary activation of the infraspinatus in patients with rotator cuff tendinopathy. Manuscript to be submitted to Journal of Electromyography and Kinesiology.

4. Provide a budget, using the original approved budget. Indicate total funds spent to date per major categories. If there was > 25% deviation (greater or less spent) of use of funds for any of the budget category, please BRIEFLY indicate the rationale.

There were no funds spent since the previous NCE application in June 2015, and a surplus of \$2151.97 will be returned to the Section via check from Arcadia University. The PI for this project changed positions in Summer 2016 and is now full-time faculty at Arcadia University, the primary performance site for this project. We have developed a recruitment plan and will update the Section with any resulting publications once the required control subjects are recruited and tested, and all data are analyzed and submitted for publication. We thank you for your support of this project.

5. Final Budget Printout – Please see attached.