

**Orthopaedic Section of the APTA
Grant Program
Annual Progress Report Form**

Date: May 7, 2018

Name of the investigators: Federico Pozzi, PT, PhD

Name of the grant: Performance of shoulder muscles after a physical therapy intervention for patients with rotator cuff tears

Award period: 1 May 2017 – 30 April 2019

Current year of the award: First

1) Summary of accomplishment in the past year

Research

- Recruited and collected a total of 12 subjects for the project “Performance of shoulder muscles after a physical therapy intervention for patients with rotator cuff tears”
- Continued the data collection for the study: “Shoulder health in health professional at risk of shoulder pain”.
 - Finished the 2 years follow up of the cohort of dental hygienist that started in 2016
 - Finished the 2 years follow up of the cohort of occupational therapist that started in 2016
 - Enrolled the cohort of dental hygienist that started in 2017
 - Preliminary results accepted for podium presentation at the International Shoulder Group meeting: August 2018, Rochester, MN.
- Developed a project to analyze shoulder muscle activation during closed and open chain exercises for the shoulder.
 - Enrolled 22 participant.
 - Preliminary results accepted for podium presentation at the International Shoulder Group meeting: August 2018, Rochester, MN.
- Lead the effort for the writing of a systematic review and meta-regression to identify predictors of shoulder and elbow injury in overhead athletes.
 - Worked with a librarian to develop a search strategy
 - Screened more than 9000 articles for inclusion
 - Currently working with a statistician to develop the analysis plan

Teaching

- Instructor in two modules (PT561b, spring; and PT561c, fall semesters) of the Evidence Based Practice course for physical therapist in the Doctor of Physical Therapy program at the University of Southern California

Learning/career development

- Presented abstract work at two conferences: WCPT Congress 2017 (Cape Town, South Africa) and APTA CSM (New Orleans, LA)
- Created an independent study to learn how to use MatLab to code for EMG data analysis.
- Participated as speaker at the USC Shoulder update course 2018 (continuing education)
- Invited speaker for a seminar at the University of Milan (Professional opportunities for Italian physical therapists in the United States)
- Received the Postdoctoral Scholar Training & Travel Award (\$1,500) to travel to WCPT congress in South Africa
- Attended a total of 12 seminar, webinar, and orthopaedic surgery grand rounds organized by the Division of Biokinesiology and Physical Therapy, Southern California Clinical and Translational Science Institute, and Keck School of Medicine.

- Held leadership position in the Postdoctoral association at USC (vice-president & representative on the Health Science Campus)
- Lead the effort to submit an educational session for CSM2019 (The dark side of PubMed: Predatory Publishing, sponsor section of research).

2) Provide a one paragraph summary of results or abstract suitable for posting on the Orthopaedic Section website:

The foci of my research include: 1) understanding the biomechanical mechanisms and impairments associated with rotator cuff related shoulder injuries; and 2) identifying optimal physical therapy treatment strategies to enhance recovery and promote active-lifestyles. For this Career Development Grant, my plan includes protected time to conduct research, focused coursework, and mentorship from established investigators.

Research: I will continue to manage a clinical trial that aims to assess the feasibility of a standardized rehabilitation protocol for patients with full thickness rotator cuff tears. Further, I am planning to add a comparison group of matched individuals without shoulder pain. Participants will be evaluated using a comprehensive battery of patient-rated outcomes, clinical measures, and biomechanical assessment. This comparison will provide detailed information on the recovery of impairments and patient-rated disability in patients with full thickness tears after undergoing the standardized rehabilitation protocol.

Focused coursework: I am planning to attend several workshops and seminars offered through the University of Southern California.

Mentorship: I will be mentored by a diverse team of senior investigators with expertise in shoulder assessment and physical therapy, clinical trials design and management, proposal and scientific writing, and statistical modeling.

In conclusion, during this career development grant, I expect to acquire four major skills related to: 1) the design and conduction of a clinical trial in rehabilitation medicine; 2) the assessment of functional loss and biomechanical impairments in patients with shoulder disorders; 3) the design of a rehabilitation intervention to address movement impairments in upper extremity disorders; 4) advanced biostatistical analysis methods. After completing this training, I will possess the necessary skills to become an independent clinician-scientist. Completing this research training will optimize my applications for competitive research funding from NIH and others.

3) Attach a list of your publications published or accepted during the past year, or currently being written. Send reprints when available. List presentations made and abstracts accepted for presentation based on this work. Indicate with an asterisk (*) those publications supported by Orthopaedic Section funding.

Publication in referred journals:

1. **Pozzi F**, White DK, Snyder-Mackler L, Zeni J Jr. (2018) Restoring physical function after total knee arthroplasty: a cross sectional comparison of progressive strengthening vs. standard physical therapy. *Physiotherapy Theory & Practice*. [accepted in December 2017]
2. Plummer HA, **Pozzi F**, Michener LA. (2018) Comparison of two trunk electromagnetic sensor placement methods during shoulder motion analysis. *Journal of Biomechanics*. 68(2), 132-135.
3. Plummer H, Sum J, **Pozzi F**, Varghese R, Michener L. (2017) Observational Scapular Dyskinesia: Known-Groups Validity in Patients With and Without Shoulder Pain. *Journal of Orthopedic and Sports Physical Therapy*. 47(8), 530-537.
4. Abujaber S, **Pozzi F**, Zeni J. (2017) Influence of weight bearing visual feedback on movement symmetry during sit to stand task. *Clinical Biomechanics*. 8(6), 110-116.

4) Budget:

Expense Category	Budgeted Amount Year 1	Actual Amount Spent Year 1	Amount Remaining in Year 1 Budget	Budgeted Year 2
Study Personnel: PI	\$18,834	\$19,238	-\$404	\$19,306
Study Personnel: Consultants	\$2,500	\$1,000	\$1,500	\$2,500
Supplies & Participant Reimbursements	\$1,750	\$1,450	\$300	\$500
Travel	\$1,500	\$1,500	\$0	\$3,000
Total	\$24,584	\$23,188	\$1,396	\$25,306

5) Objectives for the next year:

The objective for year 2 is to complete the data collection of patients with rotator cuff tears and matched healthy controls. A preliminary data analysis will be performed on the available participant and will be submitted as abstract to CSM2019. Leveraged the finding of this study to apply for a career development award from the NIH to investigate mechanism of persistent weakness in patients with rotator cuff tears who underwent physical therapy.