

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

Date: April 15, 2020

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 2019 – 30 April 2020

Current year of the award: Third

1) Summary of accomplishment in the past year

Award

- 2019 Guy G. Simoneau JOSPT Excellence in Research Award

Research

- Developed a project to measure reliability and responsiveness of strength measures in patients with shoulder pain seeking physical therapy.
 - IRB approved Feb 24, 2020
 - Recruitment on hold due to COVID-19
- Developed a project to optimize musculoskeletal modeling of the shoulder.
 - IRB approved Dec 1, 2019
 - Recruitment on hold due to COVID-19
- Developed research collaborations with the physical therapists at the Orthopaedic and Sport Medicine Institute
 - Analyzed preseason screening of the Division I Women Gymnastic Team of the University of Florida
 - Preliminary results presented at the 2020 Combined Section Meeting of the APTA (one platform and one poster)
 - One full manuscript (upper extremity screening) under review in the Orthopaedic Journal of Sport Medicine
 - One full manuscript (lower extremity screening) in preparation
 - Analyzed preseason screening of the Division I Women Softball Team of the University of Florida
 - Preliminary results presented at the 2020 Combined Section Meeting of the APTA (platform)
 - Full manuscript in preparation (Target: American Journal of Sport Medicine)
 - Developed a case study to assess the use of the Repetition in Reserve scale in runner with Achilles tendinopathy
 - Preliminary results presented at the 2020 Combined Section Meeting of the APTA (platform)
 - Full manuscript in preparation (Target: JOSPT Case)

Teaching

- Instructor in the Functional Anatomy (module I and II) course in the Doctor of Physical Therapy program at the University of Florida.
- Guest lecture for the Applied Kinesiology Undergraduate course offered through the College of Public Health and Health Profession of the University of Florida

Learning/career development

- Presented 8 abstracts at three conferences: APTA CSM (February 2020, Denver, CO), and International Congress of Shoulder and Elbow Surgery (October 2019, Buenos Aires, Argentina), and congress of the World Confederation of Physical Therapy (May 2019, Geneva, Switzerland)
- Attended a total of 10 seminar, webinar, and orthopaedic surgery grand rounds organized by the Department of Physical Therapy and the Orthopaedic and Sports Medicine Institute at the University of Florida.

- Participated in the K-College, which is a career development monthly meeting for junior faculty organized by the CTSI of the University of Florida.
- Participated in the K to R Bootcamp, which is a monthly meeting that guides the writing of a R01 application. It is organized by CTSI of the University of Florida.
- Selected as participant in the TIGRR grant writing workshop organized by the Medical University of South Carolina
- Participated as panelist in an educational session titled: “Negotiating and Advancing within the PT profession” at CSM (February 2020, Denver, CO)
- Invited speaker for the Rehabilitation Science seminar at the University of Florida. Title of the seminar “The epidemic spread of predatory publishing”.
 - This seminar was adapted and presented again as Inservice for the clinical staff of the UFHealth Acute Rehab Hospital

Grant writing

- Submitted a R21 grant (FOA PA-19-053) to the National Institute of Health, Institute of Arthritis and Musculoskeletal and Skin Diseases (October 2019). Project title: “Magnetic resonance spectroscopy biomarkers of muscle degeneration in patients with rotator cuff tears”. Status: reviewed, impact score 60.
 - Grant was revised and resubmitted in March 2020
- Submitted a R03 grant to the National Center for Medical Rehabilitation Research (March 2020). Project title: “Patient-Specific Shoulder Biomechanics to Inform Treatments of Rotator Cuff Tear”. Status: in review.
- Submitted a grant to the Research grant program of the Academy of Orthopaedic Physical Therapy. Project title: “Discriminant and predictive validity of the Staged Approach for Rehabilitation classification for patients with musculoskeletal shoulder disorders”. Status: not funded.
 - Project will be revised based on reviewer comments and resubmitted to the 2020 AOPT call for grants

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

My research interests focus on understanding the impact of physical therapy on the recovery of patients with musculoskeletal conditions of the upper and lower extremities. I assess patients’ recovery using a comprehensive set of biomechanical (motion capture), clinical, and patient-reported outcomes. My goal is to identify predictors of successful outcomes following physical therapy interventions. I plan to use the evidence derived from my research to develop innovative physical therapy approaches to optimize care and maximize functional recovery. For this Career Development Grant, my plan included protected time to conduct research, focused coursework, and mentorship from established investigators.

Research: I managed a clinical trial that aims to assess the feasibility of a standardized rehabilitation protocol for patients with full thickness rotator cuff tears. Further, I collected a comparison group of matched individuals without shoulder pain. Participants were 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 participated in the TIGRR grant writing workshop organized by the Medical University of South Carolina. I attend several workshops and seminars offered through the University Florida. I participated in the K t R bootcamp at the University of Florida, which is an interactive workshop to mentor the writing of a R01 grant.

Mentorship: I was 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, I acquired 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) grant writing skills. Completing this training gave me the necessary skills to become an independent clinician-scientist.

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**, Plummer HA, Shanley E, et al. (2020) Preseason shoulder range of motion screening and in-season risk of shoulder and elbow injuries in overhead athletes: systematic review and meta-analysis. *British Journal of Sports Medicine*. [Epub]*
2. **Pozzi F**, Plummer HA, Sanchez N, Lee Y, Michener LA. (2019) Electromyography activation of shoulder and trunk muscles is greater during closed chain compared to open chain exercises. *Journal of Electromyography and Kinesiology*. [Epub]*
3. Young IA, **Pozzi F**, Dunning J, Linkonis R, Michener LA. (2019). Immediate and Short-term Effects of Thoracic Spine Manipulation in Patients With Cervical Radiculopathy: A Randomized Controlled Trial. *Journal of Orthopaedic & Sports Physical Therapy*, 49(5), 299–309.*

Publication under review in referred journals:

1. Heck K, Zeppieri G, Bruner M, Moser M, Farmer K, **Pozzi F**. Preseason Preseason Upper Extremity Range of Motion and Strength and In-Season Injuries in Division I Collegiate Gymnasts. *Orthopaedic Journal of Sports Medicine*.*

Publication in preparation:

1. **Pozzi F**, Sousa C, Plummer H, Andrade B, Awokuse D, Kono N, Mack W, Roll S, Michener L. Repetitive dental hygienist job-related tasks increase the risk of shoulder pain and altered supraspinatus tendon morphology.*
2. Zeppieri G, Bruner M, Davis K, Moser M, Farmer K, **Pozzi F**. Preseason Strength and ROM Differ in College Softball Players Sustaining Injuries during the Competitive Season.*
3. Lancaster B, Borut M, Sansone T, **Pozzi F**. Optimizing Load Dosage Using Repetitions-in-Reserve: A Case Study of a Runner with Achilles Tendinopathy.*

4) Budget:

Expense Category	Budgeted year 2	Actual amount spent year 2	Carryover amount
Study Personnel: PI	\$10,357	0	\$10,357
Study Personnel: Consultants	\$4,500	0	\$4,500
Supplies & Participant Reimbursements	\$168.77	\$31	\$138
Travel	\$4080	\$575	\$3505
Total	\$19,105.91	\$606	\$18,500

5) Objectives for the next year:

The objective for next year is to complete the data analysis of the research project that will compare patients with full thickness tears and healthy controls. A preliminary data analysis was presented as abstract to CSM2019. I will also leverage the finding of this study to apply for a grant from the NIH to investigate mechanism of shoulder pain and persistent weakness in patients with rotator cuff tears who underwent physical therapy.