

Orthopaedic Section of the APTA Grant Program Annual Progress Report Form

Date: 5/8/2017

Name of Investigators: Jennifer Bagwell, Julie Peterson, Joanne Smith

Name of Grant: Lower Extremity Joint Loading and Trunk and Lower Extremity Muscle Activation Adaptation during Gait in Pregnant, Post-partum, and Control Participants

Award Period: 5/4/2016 to 5/3/2018

Current Year of Award completed (circle one): **1st**, 2nd, no-cost extension year (3rd)

1. Summary of accomplishments in the past year:

Over the past year, we have established referral connections with daycares and Obstetricians, purchased equipment, recruited and trained physical therapy students to assist with the project, and finalized lab procedures and analyses. Data collections were unable to begin until February due to lab renovations. Since February, we have performed second trimester testing on eight pregnant participants and have collected on three matched control participants. One pregnant participant has returned for third trimester testing thus far.

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

Due to the high prevalence of lower extremity and lumbar and pelvic pain in pregnant and post-partum females, we are investigating lower extremity joint loading and load distribution and trunk and lower extremity muscle activation in pregnant females and matched control participants. Pregnant females are being testing during the second and third trimester of pregnancy and 3-6 months post-partum. Data collections and analyses are ongoing. We hypothesize that pregnant participants will demonstrate differential joint loading responses across the lower extremity and that adaptations may persist post-partum. Understanding trunk and lower extremity neuromuscular adaptations during and after pregnancy is a crucial first step toward the development of physical therapy interventions and injury prevention strategies.

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.

Peer reviewed publications

1. Grindstaff TL, Palimenio M, Franco M, Anderson D, **Bagwell JJ**, Katsavelis D. Optimizing between session reliability for quadriceps peak torque and rate of torque development measures. In preparation.
2. Gradoz MC, Bauer LE, Grindstaff TL, **Bagwell JJ**. Reliability of hip range of motion in supine and seated positions. Submitted.
3. **Bagwell JJ**, Powers CM. Joint stress differences between people with and without cam femoroacetabular impingement during a deep squat task. *Arthroscopy*. In press.
4. **Bagwell JJ**, Bauer L, Gradoz M, Grindstaff TL. The reliability of FABER test hip range of motion measurements. *Int J Sports Phys Ther*. 2016; 11(7):1101-1105.

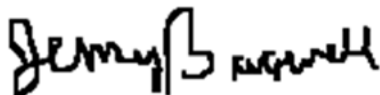
Presentations

1. **Bagwell JJ**, Runez H, Walaszek M, Lam K, Bauer L, Gradoz M. A comparison of center of pressure excursion and velocity during pregnancy as compared to control participants. In preparation for the *Proceedings of the Combined Sections Meeting of the American Physical Therapy Association*.*
2. **Bagwell JJ**, Ho KY, Powers CM. Finite element analysis of the tibial tuberosity osteotomy with anteromedialization procedure for patella instability. *Proceedings of the Annual Meeting of the American Society of Biomechanics* (accepted for August 2017).
3. Lesnak JB, White AK, Chaput M, Palimento MR, Franco M, Anderson D, Kastavelis D, **Bagwell JJ**, Grindstaff TL. *Proceedings of the Combined Sections Meeting of the American Physical Therapy Association*. San Antonio. February 2017.
4. Palimento MR, Franco M, Anderson D, **Bagwell JJ**, Kastavelis D, Grindstaff TL. Between session reliability for quadriceps peak torque and rate of torque development measures in healthy individuals. *Proceedings of the Combined Sections Meeting of the American Physical Therapy Association*. San Antonio. February 2017.
5. Chaput M, Lesnak JB, White AK, Palimento MR, Franco M, Anderson D, Kastavelis D, **Bagwell JJ**, Grindstaff TL. *Proceedings of the Combined Sections Meeting of the American Physical Therapy Association*. San Antonio. February 2017.
6. White AK, Lesnak JB, Chaput M, Palimento MR, Kastavelis D, **Bagwell JJ**, Grindstaff TL. A clinical test used to examine the impact of fatigue on hop performance in healthy individuals. *Proceedings of the Combined Sections Meeting of the American Physical Therapy Association*. San Antonio. February 2017.
7. **Bagwell JJ**, Bauer L, Gradoz M, Grindstaff TL. Reliability of FABER measurements. *Proceedings of the Combined Sections Meeting of the American Physical Therapy Association*. San Antonio. February 2017.
8. Gradoz M, Bauer L, Grindstaff TL, **Bagwell JJ**. Reliability of hip rotation range of motion in supine and seated positions. *Proceedings of the Combined Sections Meeting of the American Physical Therapy Association*. San Antonio. February 2017.
9. **Bagwell JJ**, Liao TC, Powers CM. The biomechanics of “mom jeans.” *Proceedings of the Combined Sections Meeting of the American Physical Therapy Association*. San Antonio. February 2017.

	Year 1 Budget	Year 1 Actual	Reason >25% Difference	Year 2	Year 2 Projected	
	5/1/16 - 4/30/17			5/1/17 - 4/30/18		
Compensation						
Principal Investigator	\$2,015	\$2045		\$2,000	\$2,000	
Research Assistant (\$15/hr x 270 hrs)	\$1,600	\$327.50		\$2,450	\$3,722.50	
Total Compensation	\$3,615	\$2,372.50	Lab renovations pushed start date to Feb 2017	\$4,450	\$5,722.50	
						Request ability to use software for MATLAB and visual 3D this year if reduced rate available
Software						
MATLAB	\$500	\$124.96		\$500	\$875	
Total Software	\$500	\$124.96	Reduced rate through Creighton	\$500	\$875	
Materials & Supplies						
5mm Electrode Collar Packages (\$5.85 x 100)	\$351	\$406.18		\$234	\$212	
Disposable EMG Electrodes	\$200	\$550		\$200	\$0	
Optoreflective Markers and Plates (Full Body Set)	\$500	\$212.96		\$0	\$0	
Thigh and Shank Straps (\$20 x 4)	\$80	\$0		\$0	\$80	
Data Collection Shorts/Tops (\$40 x 8)	\$320	\$317.98		\$0	\$0	
Miscellaneous Supplies	\$200	\$185.54		\$100	\$220	
Total Materials	\$1,651	\$1,672.66		\$534	\$512	
Other Expenses						
Participant Compensation (\$50 x 75 visits)	\$1,750	\$550		\$2,000	\$3,150	
Total Other Expenses	\$1,750	\$550	Lab renovations pushed start date to Feb 2017	\$2,000	\$3,150	
Total Direct Costs	\$7,516	\$4,720.13		\$7,484	\$10,259.50	

Objectives for the next year:

By September 2017, I aim to complete data collections for all second trimester participants. I plan to complete all third trimester and matched control participant testing by December 2017. Data analysis will be ongoing and will be completed by March 2017. Abstracts and manuscript preparation will occur in the Spring 2018 including abstract submission for Combined Sections Meeting 2019.



5/13/17

Your Signature

Date

Return to: Tara Fredrickson, Executive Associate Orthopaedic Section, APTA, Inc. 2920 East Avenue South, Suite 200 LaCrosse, WI 54601-7202