

Andrew D. Vigotsky

1915 Maple Ave. #503 • Evanston, IL
914.584.9750 • avigotsky@gmail.com

EDUCATION

Arizona State University, Phoenix, AZ
B.S. Kinesiology
Summa Cum Laude

May 2015

Northwestern University, Evanston, IL
M.S. Biomedical Engineering

Sept 2016 –

RESEARCH INTERESTS

Primary

Musculoskeletal and neuromuscular modeling;
pathomechanics and mechanopathology of lower
extremity injuries and pain

Secondary

Muscle physiology, pain, rehabilitation science, and
research methodology and statistics

RESEARCH EXPERIENCE

Movement Analysis Laboratory
Arizona State University, Phoenix, AZ
Student Researcher

Aug 2013 – May 2015

- Established a leadership position in order to answer research questions (4 total) from conception to completion
- Organized research teams for each project (2), developed study protocol, obtained ethics approval, collected and analyzed data, and composed and submitted manuscripts
- Technologies: EMG, force plate, and 2D motion capture
- PI: Erin H. Feser, MS

BC Athletics, LLC
Phoenix, AZ
Research Assistant

Sept 2013 – May 2015

- Assisted in developing study methodology, collecting and analyzing data, and preparing manuscripts for journal submission
- Technologies: force plate, EMG, and ultrasound
- PI: Bret Contreras, PhD

Leon Root, MD Motion Analysis Laboratory
Hospital for Special Surgery, New York, NY
Volunteer Research Assistant

Sept 2015 – May 2016

- Develop a 3D mesh wrapping model of the gluteus maximus to be used in OpenSim
- Analyze gait data
- Assist in plantar pressure data collection at West Point
- Technologies: Isokinetic dynamometry, EMG, force plate, 3D motion capture, and musculoskeletal modeling
- PI: Howard Hillstrom, PhD

Human Performance Laboratory
CUNY Lehman, Bronx, NY

Research Assistant

Sept 2015 – June 2016

- Train participants of a randomized-controlled trial
- Design and carry out a cross-sectional study on the biomechanical and psychological determinates of squat strength
- Technologies: Bioelectrical impedance, isokinetic dynamometry, force plate, 2D motion capture
- PI: Brad Schoenfeld, PhD

Neuromuscular Biomechanics Laboratory
Northwestern University, Chicago, IL

Graduate Student Researcher

Sept 2016 –

- Master's thesis
 - Investigate the relationship between shear-wave velocity and joint impedance
- PI: Sabrina Lee, PhD

Neurobionics Lab
Center for Bionic Medicine
Rehabilitation Institute of Chicago, Chicago, IL

Graduate Student Researcher

Sept 2016 –

- Master's thesis
 - Investigate the relationship between shear-wave velocity and joint impedance
- PI: Elliott Rouse, PhD

PUBLICATIONS AND PAPERS

In Review

1. **Vigotsky AD**, Bryanton MA, Nuckols G, Beardsley C, Contreras B, Evans J, Schoenfeld BJ. Biomechanical and psychological determinants of squat strength.
2. Monteiro ER, **Vigotsky AD**, Škarabot J, Brown AF, Gomes TM, Novaes JDS. Acute effects of different foam rolling volumes in the inter-set rest period on maximum repetition performance.
3. Monteiro ER, **Vigotsky AD**, Škarabot J, Brown AF, Gomes TM, Novaes JDS. Acute effects of different anterior thigh self-massage modalities on hip range of motion in trained men.
4. Schoenfeld BJ, Ogborn D, **Vigotsky A**, Franchi M, Krieger J. Hypertrophic effects of concentric versus eccentric muscle actions: A systematic review and meta-analysis.

In Press

5. Steele J, Fisher J, Skivington M, Dunn C, Arnold J, Tew G, Batterham AM, Nunan D, O'Driscoll JM, Mann S, Beedie C, Jobson S, Smith D, **Vigotsky A**, Phillips S, Estabrooks P, Winnett R. (2017). A higher effort-based paradigm in physical activity and exercise for public health: making the case for a greater emphasis on resistance training. *BMC Public Health*.
6. Zweifel MB, **Vigotsky AD**, Contreras B, Simiyu WWN. (2017). Effects of 6-week squat, deadlift, or hip thrust training program on speed, power, agility, and strength in experienced lifters: A pilot study. *Journal of Trainology*, 6(1).

Published (Refereed)

7. **Vigotsky AD**, Harper EN, Ryan DR, Contreras B. (2015). Effects of load on good morning kinematics and EMG activity. *PeerJ*, 3, e708. doi: 10.7717/peerj.708
8. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2015). A comparison of gluteus maximus, biceps femoris, and vastus lateralis EMG activity in the back squat and barbell hip thrust exercises. *Journal of applied biomechanics*, 31(6), 452-8. doi: 10.1123/jab.2014-0301

9. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2015). A comparison of two gluteus maximus EMG maximum voluntary isometric contraction positions. *PeerJ*, 3, e1261. doi: 10.7717/peerj.1261
10. **Vigotsky AD**, Lehman GJ, Contreras B, Beardsley C, Chung B, Feser EH. (2015). Acute effects of anterior thigh foam rolling on hip extension, knee flexion, and rectus femoris length in the modified Thomas test. *PeerJ*, 3, e1281. doi: 10.7717/peerj.1281
11. Patterson JM, **Vigotsky AD**, Oppenheimer NE, Feser EH. (2015). Differences in unilateral chest press muscle activation and kinematics on a stable versus unstable surface while holding one versus two dumbbells. *PeerJ*, 3, e1365. doi: 10.7717/peerj.1365
12. **Vigotsky AD**, Contreras B, Beardsley C. (2015). Biomechanical implications of skeletal muscle hypertrophy and atrophy: a musculoskeletal model. *PeerJ*, 3, e1462. doi: 10.7717/peerj.1462
13. **Vigotsky AD**, Bruhns RP. (2015). The Role of Descending Modulation In Manual Therapy and Its Analgesic Implications: A Narrative Review. *Pain Research and Treatment*, 2015, 327307. doi: 10.1155/2015/292805
14. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2015). A comparison of gluteus maximus, biceps femoris, and vastus lateralis EMG amplitude in the barbell, banded, and American hip thrust variations. *Journal of Applied Biomechanics*, 32(3), 254-260. doi: 10.1123/jab.2015-0091
15. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2016). A comparison of gluteus maximus, biceps femoris, and vastus lateralis EMG amplitude in the parallel, full, and front squat variations in resistance trained females. *Journal of applied biomechanics*, 32(1), 16-22. doi: 10.1123/jab.2015-0113
16. Schoenfeld BJ, Ogborn D, Contreras B, Cappaert T, Ribeiro AS, Alvar, BA, **Vigotsky AD**. (2016). A comparison of increases in volume load over 8 weeks of low- versus high-load resistance training. *Asian Journal of Sports Medicine*, 7(2), e29247. doi: 10.5812/asjrm.29247
17. Schoenfeld BJ, Contreras B, **Vigotsky AD**, Ogborn D, Tiryaki-Sonmez G. (2016). Upper body muscle activation during low- versus high-load resistance exercise in the bench press. *Isokinetics and Exercise Science*. doi: 10.3233/IES-160620
18. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2016). Effects of a six-week hip thrust versus front squat resistance training program on performance in adolescent males: A randomized-controlled trial. *Journal of Strength and Conditioning Research (Epub ahead of print)*. doi: 10.1519/JSC.0000000000001510
19. **Vigotsky AD**, Lehman GJ, Beardsley C, Contreras B, Chung B, Feser EH. (2016). The modified Thomas test is not a valid measure of hip extension unless pelvic tilt is controlled. *PeerJ*, 4, e2325. doi: 10.7717/peerj.2325
20. Rossi FE, Schoenfeld BJ, Ocetnik S, Young J, **Vigotsky AD**, Contreras B, Krieger JW, Miller MG, Cholewa J. (2016). Strength, body composition, and functional outcomes in the squat versus leg press exercises. *J Sport Med Phys Fit*.
21. Schoenfeld BJ, Contreras B, **Vigotsky AD**, Peterson M. (2016). Differential Effects of Heavy Versus Moderate Loads on Measures of Strength and Hypertrophy in Resistance-Trained Men. *Journal of Sports Science and Medicine*, 15, 715-722.
22. Monteiro ER, Škarabot J, **Vigotsky AD**, Brown AF, Gomes TM, Novaes JDS. (2017). Maximum repetition performance after different antagonist foam rolling volumes in the inter-set rest period. *The International Journal of Sports Physical Therapy*, 12(1), 1-9.
23. Monteiro ER, Škarabot J, **Vigotsky AD**, Brown AF, Gomes TM, Novaes JDS. (2017). Acute effects of different self-massage volumes on FMS™ overhead deep squat performance. *The International Journal of Sports Physical Therapy*.

Letters to the Editor and Perspective Articles

24. **Vigotsky AD**. (2015). A comment on the statistical analyses and purported effects in Mohr et al. *Journal of sport rehabilitation*, 24(2), 89. doi: 10.1123/JSR.2015-0019
25. **Vigotsky AD**, Ogborn D, Phillips SM. (2016). Motor unit recruitment cannot be inferred from surface EMG amplitude and basic reporting standards must be adhered to. *European Journal of Applied Physiology*, 116(3), 657-8. doi: 10.1007/s00421-015-3314-6
26. Halperin I, **Vigotsky AD**. (2016). The mind-muscle connection in resistance training: friend or foe?. *European Journal of Applied Physiology*, 116(4), 863-4. doi: 10.1007/s00421-016-3341-y

27. **Vigotsky AD**, Beardsley C, Contreras B, Steele J, Ogborn D, Phillips SM. (2017). Greater Electromyographic Responses Do Not Imply Greater Motor Unit Recruitment and 'Hypertrophic Potential' Cannot Be Inferred. *Journal of Strength and Conditioning Research*. 31(1), e1-e4. doi: 10.1519/JSC.0000000000001249

Conference Abstracts

28. **Vigotsky AD**, Contreras B. (2015). Biceps brachii and brachialis cross-sectional areas are major determinants of muscle moment arms. *American Society of Biomechanics 39th Annual Meeting*.
29. **Vigotsky AD**, Bryanton MA. (2016). Relative Muscle Contributions to Net Joint Moments in The Barbell Back Squat. *American Society of Biomechanics 40th Annual Meeting*.
30. Michalopoulos N, **Vigotsky A**, Mamalakis M, Chrysikos T, Katsini C, Raptis G. (2016). A Personalised Monitoring and Recommendation Framework for Kinetic Dysfunctions: The Trendelenburg Gait. *20th Pan-Hellenic Conference on Informatics*.

PROFESSIONAL MEMBERSHIPS AND SERVICE

- | | |
|---|----------------|
| 1. American Society of Biomechanics (ASB) | 2015 – Present |
| 2. American Physiology Society (APS) | 2016 – Present |
| 3. International Society for Electrophysiology and Kinesiology (ISEK) | 2016 – Present |

JOURNAL REFEREEING

- | | |
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| 1. <i>PeerJ</i> | 2016 – Present |
| 2. <i>European Journal of Sports Science</i> | 2016 – Present |
| 3. <i>Journal of Sports Science and Medicine</i> | 2017 – Present |
| 4. <i>Journal of Sports Sciences</i> | 2017 – Present |

AWARDS AND NOMINATIONS

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| American Kinesiology Association Undergraduate Scholar Award
“The award is intended to recognize and promote academic excellence, to further the professional competence and dedication of academically accomplished students and to promote kinesiology and its related fields.” | March 2015 |
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PRESENTATIONS AND LECTURES

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| Guest Lecture for Intro to Kinesiology (KIN 101), ASU, Phoenix, AZ
Present research findings and relate those findings to the student curriculum. | April 2015 |
| EPIC Fitness Summit, Birmingham, UK
Implementation of injury prevention strategies in strength and hypertrophy programs. Presented under The Strength Guys, Inc. | May 2015 |

RELEVANT SKILLS

- Experienced with computer programming, including MATLAB, Java, C++, Visual Basic, SQL, and numerous web development languages (PHP, HTML, CSS, JavaScript/jQuery/AJAX)
- Working knowledge of Microsoft Office, R, HLM, Stata, SPSS, PSPP, DataGraph, Noraxon MyoResearch, Biodex, OpenSim, Cortex, MATLAB, AutoCAD, and Adobe Photoshop

COMMUNITY SERVICE

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| Blue Redefined, Inc., Remote
Chief Technical Officer, Board of Directors
Blue Redefined, Inc. is a non-profit public charity (501(c)(3)), dedicated to providing entertainment to those who are disabled or hospitalized. Responsibilities include overseeing all technical aspects of the organization, including the development of the public website and, formerly, the development and upkeep of a social network for physically disabled individuals. | May 2007 – present |
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American Society of Biomechanics

Biomechanics Advocacy Subcommittee, Student Committee

Responsible for working with a team, remotely, to develop ways to encourage student participation in National Biomechanics Day; create and plan an event for students at the annual ASB meeting related to promoting interest in biomechanics; and come up with new ways to advance biomechanics at the university level, K-12, and the general public.

October 2016 – present

The Perry Initiative at Rush University, Chicago, IL

Volunteer

Assisted the Perry Outreach Initiative in teaching female high school students about different orthopedic surgery procedures in a one-day workshop intended to inspire young, high school-aged women to enter the fields of orthopedics and engineering.

February 25, 2017

MEDIA APPEARANCES AND INTERVIEWS

IceCream4PRs (Podcast)

Episode 8: Hamstrings

Discussed research pertaining to resistance training exercises that target the hamstrings muscle group.

February 2015

Iraki Nutrition (Podcast)

Episode 19: Andrew Vigotsky – Foam Rolling

Discussed research, applications, and mechanisms of foam rolling for improving range of motion and modulating pain qualia.

June 2016

Healthy Wealthy & Smart (Podcast)

Episode 256: Andrew Vigotsky: Do Biomechanics Matter?

Discussed the importance of implementing research in physical therapy practice, the role of biomechanics in pain qualia, mechanisms of foam rolling, and resistance training programming.

February 2017

REFERENCES

Bret Contreras, PhD

Owner, BC Athletics, LLC, Phoenix, AZ
1722 E. Pinchot Ave., Phoenix, AZ 85016
Phone: (480) 310-8379
E-Mail: bretcontreras@hotmail.com

Erin Harper Feser, MS

Lecturer, Kinesiology
Arizona State University
NHI-2 401E, 550 N. 3rd St., Phoenix, AZ 85004
Phone: (602) 496-0236
E-Mail: feser@asu.edu

Brad Schoenfeld, PhD

Assistant Professor, Exercise Science
CUNY Lehman College
Apex 219, 250 Bedford Park Boulevard West, Bronx, NY 10468
Phone: (718) 960-1999
E-Mail: brad.schoenfeld@lehman.cuny.edu