

CURRICULUM VITAE

Lori Jeanne Tuttle
School of Exercise & Nutritional Sciences
San Diego State University
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EDUCATION

University of California San Diego Postdoctoral	2013 Muscle Physiology
Washington University in St. Louis Ph.D.	2011 Movement Science
St. Louis University MPT	2004 Physical Therapy
St. Louis University B.S.	2002 Exercise Science

TEACHING POSITIONS

Associate Professor with Tenure San Diego State University	Fall 2017 – Present Doctor of Physical Therapy Program
Assistant Professor San Diego State University	Fall 2013 – Present Doctor of Physical Therapy Program

TEACHING EFFECTIVENESS

Curriculum Development and Teaching Innovations

1. Doctor of Physical Therapy Program, San Diego State University
 - a. Development of new Doctor of Physical Therapy course: DPT 885 Seminar in Case Presentations, San Diego State University (Fall 2013).
 - b. Development of new Doctor of Physical Therapy course: DPT 875 Medical Therapeutics in Physical Therapy Practice (Spring 2014)
 - c. Development of simulation experience for Physical Therapy students using Nursing simulation lab to simulate critical care setting
 - d. Development of additional simulation experience for Physical Therapy students using Nursing Skills lab to simulate transfer training with a patient with multiple lines

Service on Master's Thesis or Dissertation Committees

1. San Diego State University

a. Doctoral Project Committees

In Progress

Taylor Autry, Caitlin Kemp, Monique Lassaga-Bishop, Michaela Mettenleiter, Haley Shetter Janelle Zukowski (Doctor of Physical Therapy), Chairperson. *The Impact of Hip Strengthening on Pelvic Floor Function.*

Completed

Allison Keller, Milan Patel, Chelsea Saville, Rose Schlaff, Alicia Walker (Doctor of Physical Therapy). Chairperson. *Postpartum Diastasis Recti Abdominis: Treatment and Functional Implications.*

Completed

Rebecca Durant, Erin Menefee (Doctor of Physical Therapy). Committee Member. *Relationships Between Menstrual Dysfunction, training mileage, and injury in high school cross country runners.*

Completed

Katie Mitchell, Madeline Porter, Lauren Anderson, Carter Phillips, Grayson Arceo, Brian Montz (Doctor of Physical Therapy). Committee Member. *Differences in lumbar spine and lower extremity kinematics in people with and without low back pain during a step-up task: a cross sectional study.*

Completed

Elizabeth DeLozier, Kimberly Harter, Christine Plotts, Stephanie Johnson, Jessica Swartz (Doctor of Physical Therapy). Chairperson. *Beyond the Kegel: The Role of the Obturator Internus Muscle in Pelvic Floor Function*

Completed

Michelle Kunde, Kaycee Gunion, Katie Reis, Sara Villar, Garrett Cabral, Brooke Israel, Bridie McCarey (Doctor of Physical Therapy). Committee Member. *Relationships Between Y-Balance Test and Prior Injury Among Interscholastic Cross-Country Runners.*

Completed

Natalie D'Arpa, Sarah Landerholm, Cassandra Mateo, Ryan O'Connor, Jana Tokunaga (Doctor of Physical Therapy). Committee Member. *Differences in Kinematics of the Lumbar Spine and Lower Extremities in People with and Without Low Back Pain During a Pick Up Task.*

Completed

Blair Arceo, Andrea Csazi, Nicole Daher, Eva Sahatdjian (Doctor of Physical Therapy). Committee Member. *Usefulness of the Y Balance Test in Predicting Injury in Women Collegiate Softball Players.*

Completed

Megan Hill, Lindsay Miller, Kara Wickeraad (Doctor of Physical Therapy). Committee Member. *Selected Functional Outcome Measures and their Association with Prior Injury in Women's Intercollegiate Crew Athletes.*

Teaching Awards

1. San Diego State University, Doctor of Physical Therapy Program Influential Faculty Award, May 2016

PROFESSIONAL GROWTH

Refereed Journal Articles

1. **Tuttle LJ**, Bittel DC, Bittel AJ, Sinacore DR. Early-Onset Physical Frailty in Adults with Diabetes and Peripheral Neuropathy. *Canadian Journal of Diabetes (in press)*.
2. **Tuttle LJ**, Fasching J, Keller A, Patel M, Saville C, Schlaff R, Walker A, Mason M, Gombatto SP. Non-invasive Treatment for Postpartum Diastasis Recti Abdominis. *Journal of Women's Health Physical Therapy (in press)*.
3. Gombatto SP, D'Arpa N, Landerholm S, Mateo C, O'Connor R, Tokunaga J, **Tuttle LJ**. Differences in Kinematics of the Lumbar Spine and Lower Extremities in People with and Without Low Back Pain During the Down Phase of a Pick Up Task, an observational study. *Musculoskeletal Science and Practice: An International Journal of Musculoskeletal Physiotherapy (Formerly Manual Therapy)*, 2017 April; 28:25-31.
4. Bittel AJ, Bittel DC, **Tuttle LJ**, Strube MJ, Mueller MJ, Cade WT, Sinacore DR. Explanators of Sarcopenia in Individuals with Diabetes: A Cross-Sectional Analysis. *Journal of Geriatric Physical Therapy*, , 2017 April/June; 40(2):86-94..
5. Alperin M, Cook MS, **Tuttle LJ**, Esparza MC, Lieber RL. Impact of Vaginal Parity and Aging on the Architectural Design of Pelvic Floor Muscles. *American Journal of Obstetrics and Gynecology*, 2016 September; 215(3): 321.e1-9.
6. **Tuttle LJ**, DeLozier ER, Harter KA, Johnson SA, Plotts CN, Swartz JL. The Role of the Obturator Internus Muscle in Pelvic Floor Function. *Journal of Women's Health Physical Therapy*, 2016;40(1):15-19.
7. Bittel DC, Bittel AJ, **Tuttle LJ**, Hastings MK, Commean PK, Mueller MJ, Cade WT, Sinacore DR. Adipose Tissue Content, Muscle Performance and Physical Function in Obese Adults with Type 2 Diabetes Mellitus and Peripheral Neuropathy. *Journal of Diabetes and its Complications*, 2015;29(2):250-7.
8. Alperin M, **Tuttle LJ**, Conner BR, Dixon DM, Ward SR, Lieber RL. Comparison of Pelvic Muscle Architecture Between Humans and Commonly Used Laboratory Species. *International Urogynecology Journal*, 2014; 25(11): 1507-15.
9. **Tuttle LJ**, Alperin M, Lieber RL. Post-Mortem Timing of Skeletal Muscle Biochemical and Mechanical Degradation. *Journal of Biomechanics* 2014; 47(6): 1506-9.
10. **Tuttle LJ**, Nguyen OT, Cook MS, Alperin M, Shah SB, Ward SR, Lieber RL. Architectural Design of the Pelvic Floor is Consistent with Muscle Functional Subspecialization. *International Urogynecology Journal* 2014; 25(2): 205-12.

11. Nikoloau S, Hu L, **Tuttle LJ**, Weekley H, Wylie C, Lieber RL, Cornwall R. The Contribution Of Denervated Muscle To Contractures Following Neonatal Brachial Plexus Injury: Not Just Muscle Fibrosis. *Muscle and Nerve* 2014; 49(3):398-404.
12. Mueller MJ, **Tuttle LJ**, LeMaster JW, Strube MJ, McGill JB, Hastings MK, Sinacore DR. A weight-bearing versus non-weight-bearing exercise program for people with diabetes and peripheral neuropathy: A randomized controlled trial. *Archives of Physical Medicine and Rehabilitation* 2013; 94(5):829-38.
13. **Tuttle LJ**, Sinacore DR, Mueller MJ. Intermuscular Adipose Tissue is Muscle Specific and Associated with Poor Functional Performance. *Journal of Aging Research* 2012.
14. **Tuttle LJ**, Ward SR, Lieber RL. Sample Size Considerations in Human Muscle Architecture Studies. *Muscle and Nerve* 2012; 45(5):743-5.
15. **Tuttle LJ**, Hastings MK, Mueller MJ. A Weight-Bearing Exercise Program for People with Diabetes and Peripheral Neuropathy: A Case Study. *Physical Therapy* 2012; 92(1):133-41.
16. Commean PK, **Tuttle LJ**, Hastings MK, Strube MJ, Mueller MJ. Magnetic Resonance Imaging Measurement Reliability for Calf Muscle and Adipose Tissue Volume. *Journal of Magnetic Resonance Imaging* 2011; 34(6):1285-94.
17. **Tuttle LJ**, Sinacore DR, Cade WT, Mueller MJ. Lower Physical Activity is Associated with Higher Intermuscular Adipose Tissue in People with Diabetes and Peripheral Neuropathy. *Physical Therapy* 2011; 91(6):923-30.
18. Kwon OY, **Tuttle LJ**, Commean PK, Mueller MJ. Reliability and Validity of Measures of Hammer Toe Deformity and Tibial Torsion. *The Foot* 2009 (19): 149-155.
19. Kwon OY, **Tuttle LJ**, Johnson JE, Mueller MJ. Muscle imbalance and reduced ankle joint motion in people with hammer toe deformity. *Clinical Biomechanics* 2009 Oct;24(8):670-5.
20. Mueller MJ, Zou D, Bohnert KL, **Tuttle LJ**, Sinacore DR. Plantar Stresses on the Neuropathic Foot during Barefoot Walking. *Physical Therapy* 2008 Nov;88(11):1375-84.
21. Hilton TN, **Tuttle LJ**, Bohnert KL, Mueller MJ, Sinacore DR. Excessive adipose tissue infiltration in skeletal muscle in individuals with obesity, diabetes mellitus and peripheral neuropathy: Association with performance and function. *Physical Therapy* 2008 Nov;88(11):1336-44.

Abstracts/Refereed Proceedings

1. **Tuttle LJ**, Zifan A, Sun C, Mittal RK. Measuring length-tension function of the anal sphincters and puborectalis muscle using functional lumen imaging probe (FLIP). *Submitted to Digestive Diseases Week Meeting, June 2018.*
2. **Tuttle LJ**, Kunkel DC, Mittal RK. Functional Lumen Imaging Probe (FLIP) to perform biofeedback and strengthening of the anal canal muscles. *Submitted to Digestive Diseases Week Meeting, June 2018.*

3. Randell H, Smith C, St. Peter J, **Tuttle LJ**, Rauh MJ. Health characteristics of competitive collegiate dancers. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2018*
4. Fasching J, Bloom B, **Tuttle LJ**. Anti-gravity treadmill training to increase functional endurance in an individual with Late-Onset Pompe Disease and osteoporosis: a case report. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2018.*
5. Autry T, Kemp C, Lassaga-Bishop M, Mettenleiter M, Shetter H, Zukowski J, **Tuttle LJ**. The impact of hip strengthening on pelvic floor function: a novel rehabilitation approach. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2018*
6. **Tuttle LJ**, Ruppert E, Mittal RK. Functional Lumen Imaging Probe (FLIP) to Measure the Length-Tension Properties of the Anal Sphincter Muscles. *Submitted to Digestive Diseases Week Meeting, May 2017.*
7. Autry T, Kemp C, Lassaga-Bishop M, Mettenleiter M, Shetter H, Zukowski J, **Tuttle LJ**. The impact of Hip Strengthening on Pelvic Floor Function: A novel rehabilitation approach. *Submitted to San Diego State University Student Research Symposium 2017.*
8. Schlaff R, Saville C, Patel M, Walker A, Keller A, Fasching J, Mason-Cover M, Gombatto SP, **Tuttle LJ**. Postpartum Diastasis Recti Abdominis: Treatment and Functional Implications. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2017.*
9. Kunde MA, Gunion KL, Reis KE, Villar SR, Cabral GA, Israel BF, McCarey BJ, **Tuttle LJ**, Rauh MJ. Relationships Between Y-Balance Test and Prior Injury Among Interscholastic Cross-Country Runners. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2017.*
10. Schlaff R, Saville C, Patel M, Keller A, Walker A, Fasching J, **Tuttle LJ**. Postpartum Diastasis Recti Abdominis: Treatment and Functional Implications. *Submitted to San Diego State University Student Research Symposium, 2016.*
11. Sahatdjian EM, Daher NM, Cszazi AN, Arceo BS, **Tuttle LJ**, Rauh MJ. Usefulness of the Y Balance Test in Predicting Injury in Women Collegiate Softball Players. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2016.*
12. **Tuttle LJ**, DeLozier E, Harter K, Johnson S, Plotts C, Swartz J. Obturator Internus and Pelvic Floor Function. *Submitted to American Urogynecology Annual Meeting, 2015.*
13. Plotts C, Johnson S, DeLozier E, Harter K, Swartz J, **Tuttle LJ**. Obturator Internus and Pelvic Floor Function. *Submitted to San Diego State University Student Research Symposium, 2015.*
14. Alperin M, Cook MS, **Tuttle LJ**, Dixon DM, Lieber RL. Impact of vaginal delivery on structure and function of pelvic floor muscles. *Submitted to American Urogynecology Annual Meeting, 2015.*
15. Alperin M, Cook MS, **Tuttle LJ**, Dixon DM, Lieber RL. Impact of vaginal childbirth on structure and function of pelvic floor muscles. *Submitted to International Urogynecology Association Annual Meeting, 2015.*
16. DeLozier E, Harter K, Johnson S, Plotts C, Swartz J, **Tuttle LJ**. Obturator Internus and Pelvic Floor Function. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2015.*
17. Bittel DC, Bittel AJ, **Tuttle LJ**, Hastings MK, Mueller MJ, Cade WT, Sinacore DR. Relationships Between Lower Extremity Adipose Tissue, Muscle Performance, and Physical Function in Obese Adults with and without Type 2 Diabetes and Peripheral Neuropathy. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2015.*
18. Bittel AJ, Bittel DC, **Tuttle LJ**, Hastings MK, Cade WT, Sinacore DR. Critical Values of Leg Intermuscular Adipose Tissue, Plantar Flexor Strength, and Stair Power to Differentiate Individuals with Sarcopenia and Obese Type 2 DM. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2015.*

19. Bittel AJ, Bittel DC, **Tuttle LJ**, Hastings MK, Cade WT, Sinacore DR. Calf Muscle and Compartmental Intermuscular Adipose Tissue (IMAT) Accumulation in Obese, Type 2 Diabetes Mellitus and Peripheral Neuropathy: Relationship to Physical Function. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2015.*
20. Alperin M, **Tuttle LJ**, Cook MS, Dixon DM, Lieber RL. Impact of Aging on Architecture and Function of Pelvic Floor Muscles. *Submitted to American Urogynecology Society and International Urogynecology Association Joint Meeting, 2014.*
21. The Estrogen Connection: Skeletal Muscle and Bone with Aging, Injury, and Inactivity. Symposium presentation, *APTA Combined Sections Meeting, Las Vegas, NV, February 2014.*
22. **Tuttle LJ**, Lieber R. Biological And Mechanical Studies Between The Muscle Cytoskeleton And The Extracellular Matrix. *Submitted to International Congress of Vertebrate Morphology, 2013.*
23. Alperin M, **Tuttle LJ**, Conner BR, Dixon DM, Ward SR, Lieber RL. Comparison of Pelvic Muscle Architecture Between Humans and Commonly Used Laboratory Species. *Submitted to American Urogynecology Society, Annual Meeting, 2013.*
24. **Tuttle LJ**, Nguyen OT, Cook MS, Ward SR, Lieber RL. Architectural Design of the Pelvic Floor is Consistent with Muscle Function Subspecialization. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2013.*
25. Mueller MJ, **Tuttle LJ**, LeMaster JW, Strube MJ, McGill JB, Hastings MK, Sinacore DR. Weight Bearing vs. Non Weightbearing Exercise for People with Diabetes and Peripheral Neuropathy. *Submitted to American Physical Therapy Association, Combined Sections Meeting, 2013.*
26. **Tuttle LJ**, Nguyen OT, Cook MS, Ward SR, Lieber RL. Architectural Design of the Pelvic Floor is Consistent with Muscle Function Subspecialization. *Submitted to American Urogynecology Society, Annual Meeting, 2012.*
27. **Tuttle LJ**, Nguyen OT, Cook MS, Ward SR, Lieber RL. Architectural Design of the Pelvic Floor is Consistent with Muscle Function Subspecialization. *Submitted to American Physical Therapy Association, Section on Research Retreat, 2012.*
28. Nikolaou S, Hu L, **Tuttle LJ**, Lin E, Lieber RL, Cornwall R. Does muscle fibrosis contribute to contracture formation following neonatal brachial plexus injury? *Submitted American Society for Surgery of the Hand.*
29. **Tuttle LJ**, Sinacore DR, Cade WT, Mueller MJ. Average Step Count is Associated with Intermuscular Adipose Tissue in People with Diabetes and Peripheral Neuropathy. *American Physical Therapy Association, Combined Sections Meeting, 2011.*
30. **Tuttle LJ**, Mueller MJ, Sinacore DR. Intramyocellular Lipid Content is Associated with Impaired Muscle Performance and Function in People with Diabetes and People with Diabetes and Peripheral Neuropathy. *American Physical Therapy Association, Combined Sections Meeting, 2010.*
31. **Tuttle LJ**, Mueller MJ, Sinacore DR. The Effects of Peripheral Neuropathy on Intermuscular Adipose Tissue, Muscle Performance, and Physical Function: Preliminary Findings. *American Physical Therapy Association, Section on Research Retreat, 2009.*
32. **Tuttle LJ**, Mueller MJ, Sinacore DR. The Effects of Peripheral Neuropathy on Intermuscular Adipose Tissue, Muscle Performance, and Physical Function. *Washington University School of Medicine Research Symposium, 2009.*
33. Kwon OY, **Tuttle LJ**, Mueller MJ. Reliability and Validity of Measures of Hammer Toe Deformity and Tibial Torsion. *American Physical Therapy Association, Combined Sections Meeting, 2009.*

34. Kwon OY, **Tuttle LJ**, Commean PK, Mueller MJ. Hammer Toe Deformity is Associated with Muscle Imbalance and Limited Ankle Range of Motion. *American Physical Therapy Association, Combined Sections Meeting, 2009.*
35. **Tuttle LJ**, Mueller MJ, Zou D, Bohnert KL, Sinacore DR. Pressure Gradient and Subsurface Shear Stresses Contributing to Skin Breakdown on the Neuropathic Foot. *American Physical Therapy Association, Combined Sections Meeting, 2008.*

Non-refereed Proceedings

1. Muscle Alterations in Various Conditions of Aging: Implications for Rehab. Symposium Presentation. APTA Combined Sections Meeting, New Orleans, LA, February 2018.
2. I want to present a poster or platform at Combined Sections Meeting, now what? Symposium Presentation, APTA Combined Sections Meeting, New Orleans, LA, February 2018.
3. Muscle Architecture of the Female Pelvic Floor: Rehabilitation Implications. Invited Presentation, International Pelvic Pain Society Meeting, San Diego, CA October 2015.
4. The Impact of Hip Strengthening on Pelvic Floor Function. Invited Presentation, Orthopaedic Surgery Research Conference, University of California San Diego, July 2015.
5. Muscle Architecture of the Pelvic Floor. Invited Presentation, Kaiser Irvine, March 23, 2015.
6. Muscle Architecture of the Pelvic Floor. Invited Symposium presentation, California Physical Therapy Association, Annual Meeting, Oakland, CA, October 2014.

Scholarly Awards

1. Finalist, 2016 Excellence in Research Award, Sports Physical Therapy Section, American Physical Therapy Association, Sahatdjian EM, Daher NM, Csaszi AN, Arceo BS, **Tuttle LJ**, Rauh MJ. Usefulness of the Y Balance Test in predicting injury in women collegiate softball players.
2. NIH Clinical Loan Repayment Award 2012-2014
3. Neuromuscular Plasticity Scholar 2010 University of Florida
4. Doctoral Student Award (PODS II) 2010-2011 American Physical Therapy Association
5. Doctoral Student Award (PODS II) 2009-2010 American Physical Therapy Association
6. Doctoral Student Award (PODS I) 2008-2009 American Physical Therapy Association
7. Doctoral Student Award (PODS I) 2007-2008 American Physical Therapy Association
8. Summa Cum Laude 2002 St. Louis University

Funded Research Grants

1) Principal Investigator

NICHD R01HD088688 9/2017-6/2022 Impact Score: 21 Percentile: 9
An Innovative Rehabilitation Approach for Women with Anal Incontinence
 (\$2 million direct costs)

2) Principal Investigator

San Diego State University, President's Leadership Fund 5/2016-5/2017
The Impact of Hip Strengthening on Pelvic Floor Function
 (\$9,376)

3) Principal Investigator

San Diego State University, University Grants Program 1/2015-12/2016

- Postpartum Diastasis Recti Abdominis: Treatment and Functional Implications*
(\$9,868)
- 4) Principal Investigator**
San Diego State University, University Grants Program 1/2014-6/2015
Beyond the Kegel: The Role of the Obturator Internus Muscle in Pelvic Floor Function
(\$9938.50)
- 5) Postdoctoral Scholar**
NSMRC R24 HD650837 06/2011-07/2013
- 6) Principal Investigator**
Foundation for Physical Therapy 9/2009-9/2011
Muscle Structure and Performance and the Impact on Physical Function in People with Diabetes and Peripheral Neuropathy.
(\$15,000 per year)
- 7) Graduate Student**
NCMRR R21 HD058938 05/2009-04/2011—Effects of Weight Bearing Exercise on People with Diabetes and Neuropathic Feet
- 8) Graduate Student**
NIH Training Grant 09/2006-09/2009 T32 HD007434-14
- 9) Principal Investigator**
Foundation for Physical Therapy 09/2007-09/2009
Biomechanical Factors Influencing the Lower Extremities of People with Diabetes and Peripheral Neuropathy.
(\$7,500.00 per year)

Participation in Professional Associations

1. American Physical Therapy Association (2001- present)
2. American Diabetes Association (2008-2011)
3. American Urogynecology Society (2012-present)
4. International Continence Society (2018-present)
5. Reviewer: Journal of Acute Care Physical Therapy (2010-present)
6. Reviewer: Journal of Nutrition, Health and Aging (2012-present)
7. Reviewer: Muscle & Nerve (2013-present)
8. Reviewer: APTA Section on Research Abstract committee (2012-2015)
9. Reviewer: Physical Therapy Journal (2013-present)
10. Reviewer: Arthritis Care & Research (2013-present)
11. Reviewer: International Urogynecology Journal (2015-present)
12. Reviewer: Journal of Women's Health Physical Therapy (2016-present)

SERVICE

Service for the Department

1. Doctor of Physical Therapy Admissions Committee (2014-present)
2. Exercise and Nutritional Sciences Scholarship Committee (2013-present)
3. Doctor of Physical Therapy Assessment Committee (2015-present)
4. Faculty/Group Leader for DPT Educational Experience in Kerala, India, January 2017

Service for the University

1. Doctor of Physical Therapy Faculty Search Committee (2014-2015, 2015-2016)
2. Judge, Student Research Symposium (2015, 2016)
3. Ad Hoc Committee Member, San Diego State University Student-Athlete Scholarship Appeals Committee (2016)
4. Exercise and Nutritional Sciences, Faculty Hearing Panel (2017-2018)
5. College of Health and Human Services Research and Scholarly Activity Committee (2017-2019)

Service for the Profession

1. Reviewer: Journal of Acute Care Physical Therapy (2010-present)
2. Reviewer: Journal of Nutrition, Health and Aging (2012-present)
3. Reviewer: Muscle & Nerve (2013-present)
4. Reviewer: APTA Section on Research Abstract committee (2012-2015)
5. Reviewer: Physical Therapy Journal (2013-present)
6. Reviewer: Arthritis Care & Research (2013-present)
7. Reviewer: International Urogynecology Journal (2015-present)
8. Mentor, Journal of Acute Care Physical Therapy Writing Scholarship (2015-2016, 2016-2017, 2017-2018)
9. Reviewer: NIH Urologic and Urogynecologic Small Business Applications (2016)
10. Foundation for Physical Therapy Scientific Review Committee (2018-2021)