

# Richard W. Willy, PT, PhD

## CURRICULUM VITAE

University of Montana  
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### Education:

University of Delaware Doctor of Philosophy, Biomechanics & Movement Science Dissertation: "Patellofemoral Pain Syndrome: Sex differences in gait, joint alignment, and cartilage contact area and an investigation of a neuromuscular treatment" Advisor: Irene S. Davis, PhD, PT, FACSM, FAPTA	2007 – 2011
Ohio University Master of Physical Therapy	June 1999
Ohio University Bachelor of Sport Science, Exercise Physiology	June 1997

### Licensure Information:

Montana #13112

### Fellowships, Residences, Certifications:

n/a

### Employment and Positions Held:

Assistant Professor University of Montana School of Physical Therapy and Movement Sciences Missoula, MT USA 59812	2017-Present
Assistant Professor East Carolina University Department of Physical Therapy Greenville, NC USA 27834	2013-2017
Assistant Professor Ohio University Division of Physical Therapy Athens, Ohio 45701	2011-2013

### Scholarship:

Peer Reviewed Publications:

Brorsson A\*, **Willy, RW**, Tranberg R, Silbernagel KG. (epub 2017, Aug. 1) Heel-rise height deficit 1-year post-Achilles tendon rupture relates to changes in ankle biomechanics in the long-term. *Am J Sports Med.* PMID: 28783473

Powell HC, Silbernagel KG, Brorsson A,\* Tranberg R, **Willy RW**. (Accepted 6/14/2017) Individuals post-Achilles tendon rupture demonstrate increased knee kinetics with reduced ankle function during a single leg drop countermovement jump. *J. Orthop Sport Phys. Ther.*

Esculier JF\*, **Willy RW**, Baggaley MW, Meardon SA, Willson JD. (accepted 8/16/2017) Kinetic and kinematic predictors of medial tibiofemoral force during walking and running. *Knee.*

Bowersock CD\*, **Willy RW**, DeVita P, Willson JD. (2017) Reduced step length reduces knee joint contact forces during running following anterior cruciate ligament reconstruction but does not alter inter-limb asymmetry. *Clin. Biomech.* 43:79-85. PMID: 28214426.

**Willy RW**, Brorsson A, Powell HC, Willson JD, Tranberg R, Silbernagel KG. (2017). Elevated Knee Joint Kinetics and Reduced Ankle Kinetics Are Present During Jogging and Hopping After Achilles Tendon Ruptures. *Am J Sports Med.*45(5): 1124-1133. PMID: 28186834

**Willy RW**, Willson, JD, Clowers K, Baggaley M, Murray N. (2016). The effects of body-borne loads and cadence manipulation on patellofemoral and tibiofemoral joint kinetics during running. *J. of Biomechanics.* 49(16):4028-4033. PMID: 27839698

**Willy RW**, Meira E. (2016) Biomechanical interventions for the treatment of patellofemoral pain. *Int. J. Sp. Phys. Ther.* 11(6):877-890. PMID: 27904791

Bowersock C\*, DeVita P, **Willy RW**, Willson JD. (epub 2016, Nov. 1) Independent effects of step length and foot strike pattern on tibiofemoral joint forces during running. *J. Sports Sciences.* PMID: 27800702

Werner D, **Willy RW**, Willson JD, Barrios JA. (2017) Validity, reliability and normative values for clinically-assessed frontal tibial orientation as a measure of varus-valgus knee alignment. *International Journal of Athletic Therapy and Training.* 22(2): 29-33. doi/10.1123/ijatt.2016-0047.

**Willy RW**, Bigelow MA, Kolesar A, Willson JD, Thomas JS. (epub 2016 Apr 30). Lower extremity joint kinetics and tibiofemoral contact forces during running in young individuals with and without a history of partial meniscectomy. *Knee Surgery, Sports Traumatology, Arthroscopy.* PMID: 27139229

**Willy RW**, Halsey L, Hayek A, Johnson H, Willson JD. (2016). Comparison of patellofemoral joint stress and Achilles tendon loads during overground and treadmill running. *J. Orthop. Sports PT.* 46(8): 664-672. PMID: 27170525.

Baggaley M, **Willy RW**, Meardon SA. (epub 2016 Mar 19) Primary and secondary effects of real-time feedback to reduce vertical loading rate during running. *Scand. J. Med & Sci Sp.* PMID: 26992659

**Willy RW**, Meardon SA, Schmidt A, Blaylock NR, Hadding SA, Willson JD. (2016).

Changes in tibiofemoral contact forces during running in response to in-field gait retraining. *J. Sports Sciences*. Sep;34(17):1602-11. PMID: 26679058

Blackmore T, **Willy RW**, Creaby M. (2016) The high frequency component of the vertical ground reaction force is a valid surrogate measure of the impact peak. *J. of Biomech*. PMID: 26783094

**Willy RW**, Buchenic L, Rogacki K, Ackerman J, Schmidt A, Willson JD. (2016) In-field gait retraining and mobile monitoring to address running biomechanics associated with tibial stress fracture. *Scand. J. Med & Sci Sp*. 2016. Feb;26(2):197-205. PMID: 25652871.

Willson JD, Loss JR, **Willy RW**, Meardon SA. (2015). Sex differences in running mechanics and patellofemoral joint kinetics following an exhaustive run. *J. of Biomech*. 2015 Nov 26;48(15):4155-9. PMID: 26525514

Willson JD, Ratcliff OM, Meardon SA, **Willy RW**. (2015). Influence of step length and landing pattern on patellofemoral joint kinetics during running. *Scand. J. Med & Sci Sp*. 2015 Dec;25(6):736-43. PMID: 25585589

**Willy RW**, Davis IS. (2014). Comparison of minimalist shoe running and standard shoe running on kinematics and impact forces associated with common running injuries. *Med. Science Sport and Ex*. 46(2):318-23. PMID: 23877378.

**Willy RW**, Davis IS. (2013). Varied response to mirror gait retraining of gluteus medius control, hip kinematics, pain, and function in 2 female runners with patellofemoral pain. *J. Ortho Sports PT*. 43(12):864-74. PMID: 24175611

**Willy RW**, Scholz J, Davis IS. (2012). Mirror gait retraining for the treatment of patellofemoral pain syndrome in female runners. *Clin. Biomech*. 27(10):1045-51. PMID: 22917625.

**Willy RW**, Manal K, Witvrouw E, Davis IS. (2012). Are mechanics different between male and female runners with patellofemoral pain? *Med. Science Sport and Ex*. 44(11):2165-71. PMID: 22843103.

Silbernagel KG, **Willy R**, Davis IS (2012). Pre- and post-injury running analysis along with measurements of strength, endurance, and tendon length in a patient with an Achilles tendon rupture. *J. Ortho Sports PT*. 42(6):521-9 PMID: 22282229.

**Willy RW**, Davis IS. (2011). The Effect of a Hip Strengthening Program on Hip Mechanics during Running and during a Single Leg Squat. *J. Ortho Sports PT*, 41(9):625-632. PMID: 21765220.

**Willy RW**, Kyle BA, Moore SA, Chleboun GS. (2001). The effect of cessation and resumption of a hamstring muscle stretching program on joint range of motion. *J. Ortho Sports PT*, 31(3):138-144. PMID: 11297019.

#### Peer Reviewed Scientific and Professional Presentations:

##### Invited Lectures

“Endurance running injuries: International Olympic Committee (IOC) Sports Physiotherapy Lecture.” **Willy RW** (2016). Post-Graduate IOC Diploma in Sports Physiotherapies distance learning program.

“2017 Master Clinician Series: Clinical Science on the Knee.” **Willy RW**. APTA Section on Research. Newark, DE: July 28-30, 2017.

“To post-doc or not? Advice for new PhD’s in the field of Physical Therapy.” Symposium: 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA), San Antonio, TX. Sponsored by the Research Section.

“Motor learning techniques for the treatment of sports and neurologically afflicted populations.” Symposium: 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA), San Antonio, TX. Sponsored by the Sports Section.

“Achilles Tendon Rupture: Is Full Recovery Possible Perspectives From an Orthopedic Surgeon, a Physical Therapist, and a Biomechanist.” Silbernagel KG, Nilsson-Helander K, **Willy RW**. (2016) American Physical Therapy Association Combined Sections Meeting, Anaheim, CA.

“Using Movement Assessment Technology in Clinical Practice.” Sigward S, Salsich G, **Willy RW**. (2016) American Physical Therapy Association Combined Sections Meeting, Anaheim, CA.

“Gait retraining: evidence into clinical practice.” **Willy RW**, Barton CB. (2016) Danish Sportsmedicine Congress. Kolding, Denmark.

“Workshop: Using technology to incorporate gait retraining into clinical practice.” **Willy RW**. (2016) Danish Sportsmedicine Congress. Kolding, Denmark.

“Overview of running shoe type and mechanics.” **Willy RW**. (2016) Danish Sportsmedicine Congress. Kolding, Denmark.

“Perspectives in running injuries.” **Willy RW**. (2015). Norwegian National Sportsmedicine Congress. Trondheim, Norway.

“Update on physical therapy for the treatment of patellofemoral pain.” **Willy RW**. (2015). Norwegian National Sportsmedicine Congress. Trondheim, Norway.

“Workshop: Incorporating Gait retraining in the treatment of the injured runner.” **Willy RW**. (2015). Norwegian National Sportsmedicine Congress. Trondheim, Norway.

“Update on the treatment of patellofemoral pain in the athlete.” **Willy RW**. Plenary speaker. Fysioterapeuterna: Swedish Physical Therapists in Sports Medicine Annual Meeting. Stockholm, Sweden, March 19-21, 2015.

“Perspectives in running injuries.” **Willy RW**. Symposium. Fysioterapeuterna: Swedish Physical Therapists in Sports Medicine Annual Meeting. Stockholm, Sweden, March 19-21, 2015.

“Motor learning techniques to treat the injured runner.” **Willy RW**. Swedish Physical Therapists in Sports Medicine Annual Meeting. Stockholm, Sweden, March 19-21, 2015.

“Motor learning techniques to treat the injured runner.” Reisman D, **Willy RW**. Symposium. Combined Sections Meeting of the American Physical Therapy Association.

Indianapolis, IN. Feb. 5th, 2015.

"I've completed a running evaluation. What's next?" Adams D, Greenberg S, **Willy RW**. Symposium. Combined Sections Meeting of the American Physical Therapy Association. Indianapolis, IN. Feb. 6th, 2015.

"Conducting a clinical gait analysis of the injured runner." **Willy RW**. Functional Anatomy Course (Lead instructor: Joseph Zeni, PT, PhD). Dept of Physical Therapy, University of Delaware, Nov. 24th, 2014.

"Evaluating gait retraining programs for the use in orthopedic and sports populations." **Willy RW**. Dept of Mechanical Engineering. NC State University. Nov. 5th, 2014.

"Pathomechanical paradigm for treatment of the injured runner." **Willy RW**. Norwegian Institute of Sports Medicine (NIMI), Oslo Norway. Sept. 11th-12th, 2014.

"The use of gait retraining to facilitate a safe and durable return to running." **Willy RW**. As part of symposium on "Return to sports." Other panel speakers: Thigpen C., Loggerstedt D, Zeni J. Combined Sections meeting of the American Physical Therapy Association. Las Vegas, NV; 2014.

"Gait retraining for the treatment of the injured runner: translating evidence into the clinic." **Willy RW**. 2013 Annual Meeting of the Ohio Physical Therapy Association, April 13th, 2013; Columbus, Ohio.

"Gait retraining for the treatment of common running overuse injuries." **Willy RW**. 11th Scandinavian Congress in Medicine and Science in Sports and the Annual Swedish Meeting in Sports Medicine, 19-22 September 2012; Malmo, Sweden.

#### Peer-reviewed Abstracts Presented at International Conferences:

Murray N, **Willy RW**. Changes in Cognitive Demand, Impact Forces and Knee Joint Loading to Reduce Risk Factors Associated with Tibial Stress Fractures in Response to In-field Gait Retraining. North American Society for the Psychology of Sport and Physical Activity (NASPSPA). Montreal, CAN. June 15-18, 2016.

Brorsson A\*, **Willy RW**, Powell H, Tranberg R, Silbernagel KG. (2016). The ability to regain normal ankle biomechanics during jumping after an Achilles tendon rupture is related to single leg heel-rise height. European Society for Sports Traumatology, Knee Surgery and Arthroscopy. Barcelona, Spain.

**Willy RW**, Willson JD, Buchenic L, Rogacki K, Ackerman J, Schmidt A. (2014) In-field gait retraining and mobile monitoring to reduce risk of tibial stress fracture and patellofemoral pain in high risk runners. 7th World Congress of Biomechanics, Boston, MA.

Willson JD, **Willy RW**, DeVita P. (2014) Changes in patellofemoral joint loads and loading rate during a prolonged run. 7th World Congress of Biomechanics, Boston, MA.

**Willy RW**, Buchenic, L. Rogacki K, Ackerman J, Schmidt A. (2013). The effects of a gait retraining program using mobile biofeedback in high risk runners. International Patellofemoral Pain Research Retreat. Vancouver, BC. Sept 18th-20th, 2013.

Silbernagel KG, **Willy R**, Davis IS (2012). Pre- and post-injury running analysis along with measurements of strength, endurance, and tendon length in a patient with an Achilles tendon rupture. 11th Scandinavian Congress in Medicine and Science in Sports and the Annual Swedish Meeting in Sports Medicine, 19-22 September 2012; Malmo, Sweden.

**Willy RW**, Davis IS. (2011) The effects of mirror gait retraining on running mechanics and pain in females with patellofemoral pain syndrome. International Patellofemoral Pain Retreat. Ghent, Belgium. September 1-3rd, 2011.

**Willy RW**, Davis IS. (2011) Sex differences in the mechanics of patellofemoral pain syndrome. International Patellofemoral Pain Retreat. Ghent, Belgium. September 1-3rd, 2011.

#### Peer-Reviewed Abstracts Presented at National Conferences

Meardon SA, Blank Z, Derrick T, Baggaley M, Willson JD, **Willy RW**. Relationship between tibial stress and biomechanical factors associated with stress fracture. Proceedings of 2017 American Society of Biomechanics Annual Meeting. Boulder, CO.

Powell HP, Silbernagel KG, Brorrson A\*, Tranberg R, **Willy RW**. Individuals post-Achilles tendon rupture demonstrate increased knee kinetics with reduced ankle function during a single leg drop countermovement jump. 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA), San Antonio, TX.  
\*\*Finalist for 2017 APTA Sports Section, Excellence in Research Award\*\*

Brafford B, Murray N, Willson JD, Meardon SA, Baggaley M, **Willy RW**. The Effects of an In-Field Gait Retraining Program on Dual Task Performance in Runners with a History of Tibial Stress Injury. 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA).

Johnson H, Willson JD, **Willy RW**. Tibiofemoral Contact Forces During Treadmill and Overground Running. 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA).

Morrisette M, **Willy RW**, Blaylock N, Baggaley M, Meardon SA. Adaptability to Novel Running Conditions following Knee Meniscectomy. 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA).

Esculier JF\*, **Willy RW**, Baggaley M, Meardon SA, Willson JD. Kinetic and kinematic predictors of medial tibiofemoral force during running. 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA).

Hollingsworth C, Bowersock C\*, **Willy RW**, Willson JD. Long term knee joint contact force asymmetry during running after ACL reconstruction. 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA), San Antonio, TX.

Suydam S, Evans M, **Willy RW**. Community-based running measures associated to pain. 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA), San Antonio, TX.

Brown E, **Willy RW**, Willson JD, Baggaley M, Jenkins W, Bartol K, Meardon SA. Relationship of Running Related Tibial Stress to Foot Mobility and Frontal Plane Tibial

Alignment. 2017 Combined Sections Meeting (CSM) of the American Physical Therapy Association (APTA), San Antonio, TX.

Domire Z, **Willy RW**. Examination of the mechanism for plantar flexor strength deficits after Achilles tendon rupture: A simulation study. Annual meeting of the American Society of Biomechanics, Raleigh, NC, 2016.

Meardon SA, Willson JD, Baggaley M, **Willy RW**. Sex differences in distal tibia bone stress during running. Annual meeting of the American Society of Biomechanics, Raleigh, NC, 2016.

**Willy RW**, Willson JD, Meardon SA, Baggaley M, Murray N. Effects of step length manipulation on knee loads while running with and without load carriage in ROTC cadets. Annual meeting of the American Society of Biomechanics, Raleigh, NC, 2016.

Blaylock NR, Meardon SA, Willson JD, **Willy RW**. (2016) Gait modification to reduce tibiofemoral contact forces during running in individuals who are post-meniscectomy. American Physical Therapy Association Combined Sections Meeting, Anaheim, CA. **\*\*Finalist for the 2016 APTA Sports Section, Excellence in Research Award\*\***

Powell H, Silbernagel KG, Brorsson A\*, Tranberg R, Willson JD, **Willy RW**. (2016) Patellofemoral and tibiofemoral joint loading asymmetries are present during running and hopping in individuals 5 years post-Achilles tendon rupture. American Physical Therapy Association Combined Sections Meeting, Anaheim, CA.

Brorsson A\*, **Willy RW**, Powell H, Tranberg R, Silbernagel KG. (2016) The heel-rise height one year after an Achilles tendon rupture relates to ankle biomechanics during jumping 5 years later. American Physical Therapy Association Combined Sections Meeting, Anaheim, CA.

Brown EJ, **Willy RW**, Baggaley M, Willson JD, Jenkins WL, Meardon SA. (2016) Relationship between Navicular Drop, Tibial Mechanical Axis and Tibial Stress Injury Related Running Mechanics. American Physical Therapy Association Combined Sections Meeting, Anaheim, CA.

Meardon SA, Stubbs LA, Derrick TR, Willson JD, Baggaley M, **Willy RW**. (2016) Comparison of running gait modifications on tibial stress. American Physical Therapy Association Combined Sections Meeting, Anaheim, CA.

Sanii AR, Warren JM, Johnson H, **Willy RW**, Willson JD. (2016) Predictors of Tibiofemoral Joint Contact Forces During Running. American Physical Therapy Association Combined Sections Meeting, Anaheim, CA.

Warren JM, Sanii AR, Huf M, **Willy RW**, Willson JD. (2016) Clinical prediction of patellofemoral joint contact force during running. American Physical Therapy Association Combined Sections Meeting, Anaheim, CA.

Willson JD, **Willy RW**, Meardon SM, Barrios JA. (2015) Kinematic predictors of tibiofemoral and patellofemoral joint impulse during running. American Society of Biomechanics Annual Meeting. Columbus, OH.

Willson JD, Hayek M, Edwards K, Hollingsworth CN, **Willy RW**. (2015) Decreased patellofemoral joint loads following anterior cruciate ligament reconstruction. American

Physical Therapy Association Combined Sections Meeting, Indianapolis, IN.

Bigelow M, Kolesar A, Thomas J, Willson JD, **Willy RW**. (2015) Quadriceps strength and knee joint loading during running in individuals who are post-partial meniscectomy. Combined Sections Meeting of the American Physical Therapy Association. Indianapolis, IN. Feb. 6th, 2015.

Willson JD, Hayek M, Edwards K, Hollingsworth C, **Willy RW**. (2015) Decreased patellofemoral joint loads following anterior cruciate ligament reconstruction. Combined Sections Meeting of the American Physical Therapy Association. Indianapolis, IN. Feb. 4th, 2015.

**Willy RW**, Buchenic, L. Rogacki K, Ackerman J, Schmidt A. (2014) The effects of a gait retraining program using mobile biofeedback in high risk runners. Combined Sections meeting of the American APTA Combined Sections Meeting. Las Vegas, NV; 2014.

Buchenic, L. Rogacki K, Ackerman J, Schmidt A, **Willy RW**. (2014) Within Session effects of increased step rate in runners at high risk for tibial stress fractures. Combined Sections meeting of the American APTA Combined Sections Meeting. Las Vegas, NV; 2014.

**Willy RW**, Ossim M, Clark BC, Thomas JS. (2014) Frontal plane walking mechanics in young individuals status post partial medial meniscectomy. 2013 Annual Meeting of the American College of Sports Medicine. Indianapolis, In.

Razzook, A, Gleason C, **Willy R**, Fellin R, Davis I, Stanhope S. (2012). Average ankle dynamic joint stiffness during heel strike running. 2012 Annual meeting of the American Society of Biomechanics. Gainesville, Fla; 2012.

**Willy RW**, Davis IS. Predictors of knee adduction and knee adduction moment in male runners with patellofemoral pain syndrome. (2012). APTA Combined Sections Meeting. Chicago, Ill; 2012.

Silbernagel KG, **Willy R**, Davis IS (2012). Pre- and post-injury running analysis along with measurements of strength, endurance, and tendon length in a patient with an Achilles tendon rupture. APTA Combined Sections Meeting. Chicago, Ill; 2012.

**Willy RW**, Davis IS. (2011). The effects of mirror gait retraining on running mechanics and pain in females with patellofemoral pain syndrome: A three-month follow-up. American College of Sports Medicine Annual Meeting. Denver, CO;2011.

**Willy RW**, Davis IS. (2011). The effects of mirror gait retraining on runners with patellofemoral pain syndrome: A one-month follow-up. APTA Combined Sections Meeting. New Orleans, LA; 2011.

**Willy RW**, Davis IS. (2010). The effects of a hip strengthening program on running and squatting kinematics in females at risk for patellofemoral pain syndrome. APTA Combined Sections Meeting. San Diego, CA; 2010.

**Willy RW**, Noehren B, Davis IS. (2010) Reducing abnormal alignment in female runners with PFPS through gait retraining using mirror feedback. American Society of Biomechanics Annual Conference. Providence, RI; 2010.



**Willy RW**, Davis IS. (2010). A comparison of hip mechanics in male and female runners with patellofemoral pain syndrome. American College of Sports Medicine Annual Meeting. Baltimore, MD; 2010.

Westcott M, Rhombach J, Willy RW, Davis IS. (2010). Hip strength and 3-D mechanics during running and squatting in asymptomatic female runners. American College of Sports Medicine Annual Meeting. Baltimore, MD; 2010.

**Willy RW**, Davis I. (2009). The effects of a hip strengthening program on running and squatting mechanics in female runners. American Society of Biomechanics. State College, PA; 2009.

**Willy RW**, Davis I. (2009). Kinematic and kinetic comparison of running in neutral cushioned shoe and a minimal shoe. American College of Sports Medicine Annual Meeting. Seattle, WA; 2009.

**Willy RW**, Davis IS. (2008) Instrumented comparison of overground and treadmill running in healthy individuals. American College of Sports Medicine Annual Meeting. Indianapolis, IN; 2008.

**Willy RW**, Pohl M, Davis I. (2008). Calculation of vertical load rates in the absence of vertical impact peaks. North American College of Biomechanics. Ann Arbor, MI; 2008.

**Willy RW**, Kyle B, Moore S, Chleboun GS. (1999). The effect of cessation and resumption of a muscle stretching program on joint range of motion. APTA Combined Sections Meeting. Seattle, WA; 1999.

Non-peer-reviewed journal articles:

**Willy RW**. (2013). A pathomechanical paradigm for treating the injured runner. Norwegian J. of Sports Med. 28(3), 6-10.

Miller A, **Willy RW**. (2013)Retraining fixes faulty gait in injured runners. Lower Extremity Review. 5(6):29-33.

Books:

n\ a

Book Chapters:

Willson JD, **Willy RW**. Current Concepts in the Rehabilitation of the Knee: Conservative management of patellofemoral pain. APTA Sports Section Independent Study Course, (2014).

Abstracts and/or Proceedings:

n\ a

Awarded Grants:

Completed: Scandinavian Center for Sports Research Traumatology /Rehabilitation/Orthopedics: Gait analysis of walking and running in patients with an Achilles tendon rupture (P2014-0112): \$30,000. Co-I. 2014-2015. PI: Karin Silbernagel.

Completed: In-field gait analysis and gait retraining to reduce risk factors associated with tibial stress fractures. Interdisciplinary Research Collaboration Award East Carolina

University (p2015-2016) PI. (\$15,909). CO-I's: Nicholas Murray, PhD, Stacey Meardon, PT, PhD, ATC, John Willson, PT, PhD.

Completed: Quadriceps strength training and knee joint motion training in knee osteoarthritis. Interdisciplinary Research Collaboration Award East Carolina University. \$19,013. PI: Paul DeVita. Role: Co-I. 2014-2015.

Completed: 2012 Ohio University Summer Research Award: "A novel mobile feedback system to reduce impact forces during running in college-based Army ROTC training corps." Role: PI. (\$9720).

Completed: 2012 Ohio Musculoskeletal and Neurological Institute (OMNI): Instrumentation funding award (\$3600).

Completed: 2012 Ohio University Research Council Award: "The effect of realtime joint kinetic retraining in individuals at high risk for the development of knee osteoarthritis." Primary investigator. (\$7963)

2011 American College of Sports Medicine Biomechanics Travel Award (\$300)

2010 American College of Sports Medicine Biomechanics Research Award (\$500)

2010-2011 Foundation for Physical Therapy PODS II Scholarship recipient (\$15,000)

2009-2010 Foundation for Physical Therapy PODS I Scholarship recipient (\$7500)

2008-2009 Foundation for Physical Therapy PODS I Scholarship recipient (\$7500)

2008 University of Delaware Professional Development Award (\$500)

2009 University of Delaware Professional Development Award (\$500)

2007-2011 Drayer Physical Therapy Institute Doctoral Research Fellowship (\$21,000 annually)

#### Grants not Awarded:

Invited for full proposal. Declined invitation: "Predicting Warfighter knee loads after anterior cruciate ligament injury while under load and in the field." Department of Defense. PRORP: Award Mechanism: FY16 Peer Reviewed Orthopaedic Research Program - Clinical Translational Research Award. Log Number OR160089. Submitted, Sept. 7th, 2016. Role: PI. \$1.635 million. CO-I's: John Willson, John Ramsay (Army Research, Natick, MASS: NSRDEC).

Unfunded: "Testing Warfighter knee joint loading parameters as a measure of performance during in-the-field walking and running under load, fatigue and cognitive challenges." Solicitation Number W911QY-15-R-0016. U.S. Army Natick Soldier Systems Center Natick Soldier Research, Development and Engineering Center (NSRDEC): Biomechanics and Warrior Performance Divisions. Invited for full proposal. \$1,536,000.00. Role: Primary Investigator. CO-I's: Nicholas Murray, PhD, Stacey Meardon, PT, PhD, ATC, John Willson, PT, PhD, John Ramsay, PhD (NSRDEC).

#### Current Research Activity:

**Willy RW**, DeVita P, Meardon SA, Willson JD. (in review) Effects of step length manipulation and body-borne load on knee loads during walking. J. Strength & Cond. Res.

Blackmore T, **Willy RW**, Creaby M. (in review). The use of the harmonics of the vertical ground reaction force as a surrogate for vertical loading rate. Gait & Posture.

Grimpampi E, **Willy RW**, Rao G. (in review). Efficacy of trunk versus tibial mounted inertial measurement units to assess tibial shock. J. Sp. Sci.

Anterior knee pain/Patellofemoral pain Clinical Practice Guideline (CPG) development team member for the American Physical Therapy Association. Anticipate completion of CPG in January of 2018.

## **Service:**

### Community Service:

n/a

### Professional Service:

Graduate student committee work

In progress: Thesis committee member: Tyler Whittier. "Neural Pathways of the Brain Involving Motor Learning and Control Measured by Electroencephalography (EEG)" East Carolina University. Greenville, NC. Committee: Nicholas Murray, Christopher Mizelle, Richard Willy.

In progress: Dissertation committee member: Jean-Francois Esculier. Laval University, Quebec City, CAN.

Completed: Dissertation examiner: Lachlan Giles, University of La Trobe, Melbourne, AUS. "The assessment and rehabilitation of quadriceps atrophy in patellofemoral pain." Committee: Jodie McClelland, Jill Cook, Kate Webster.

Completed: Alex Geronimo, East Carolina University, Department of Kinesiology. MS thesis. "Effect of Previous Hamstring Strain on Anterior Cruciate Ligament (ACL) Loading." Adviser: Anthony Kulas, PhD, ATC. Role: thesis committee member.

Completed: Paula Clare Charlton, Melbourne School of Health Sciences, Doctor of Clinical Physiotherapy Program thesis. "Movement assessment of individuals post-hip arthroscopy." Adviser: Kay Crossley, PhD, PT. Role: thesis committee member.

Named to APTA Sports Section scientific review committee, 2015-present.

Named to American Society of Biomechanics scientific review committee, 2016-present.

Secretary, Biomechanics Special Interest Group, American Physical Therapy Association: 2013-Present.

Reviewer: APTA 2017 Combined Sections Meeting, Sports Section, 20 abstract reviewed.

Reviewer: 2017 International Patellofemoral Pain Retreat

Reviewer: APTA, 2016 Combined Sections Meeting, Sports Section, 20 abstracts reviewed, 2016

Reviewer: International Patellofemoral Research Retreat, 45 abstracts, 2015

Independent Monitoring Committee Member: Using an interactive game to reduce fear and increase spine motion in low back pain. NIH 1R21ar064430-01A1: The LEARNING Study. 2014-2016. PI: James Thomas, PT, PhD.

Session Moderator: Trends in lower extremity injury prevention. Combined Sections Meeting of the American Physical Therapy Association. San Antonio, TX. Feb. 2017.

Session Moderator: Emerging research in running injuries. Combined Sections Meeting of the American Physical Therapy Association. Indianapolis, IN. Feb. 5th, 2015.

Session Moderator: Strength training the endurance athlete. Danish Sports Medicine Congress. Kolding, DK. Feb 4th, 2016.

Military Medicine: Reviewer

Journal of Sports Sciences: Reviewer

PLOS ONE: reviewer.

Journal of Orthopedic Research: Reviewer

Medicine and Science in Sport and Exercise: Reviewer.

Scandinavian Journal of Medicine and Science in Sports: Reviewer.

Journal of Orthopedic and Sport Physical therapy: Reviewer

Journal of Applied Biomechanics: Reviewer

Journal of Biomechanics: Reviewer

British Journal of Sports Medicine: Reviewer

Service to the University/School/Department:

Chair: Research Advisory Committee, College of Health Sciences, East Carolina University: 2014-Present.

Member: Search committee for neuroscience tenure faculty position. Department of Physical Therapy, East Carolina University: Present.

Member: Committee to develop effective DPT interview strategies for admissions, Department of Physical Therapy, East Carolina University: 2015.

**Honors and Awards:**

2017: University Scholar, East Carolina University: Award for high research productivity

2007-2017: Board Certified Specialist in Orthopedic Physical Therapy (OCS)

2016: Finalist for Excellence in Research: Sports Section, American Physical Therapy Association (APTA), Combined Sections Meeting, Anaheim, CA.

2017: Finalist for Excellence in Research: Sports Section, American Physical Therapy Association (APTA), Combined Sections Meeting, San Antonio, TX.

2012: Award for best platform presentation by young investigator (co-author), The Scandinavian Congress of Medicine and Science in Sports

### **Membership in Scientific/Professional Organizations:**

American Physical Therapy Association: 1997-present. Membership: 229444.

Orthopedics Section Member

Sport Section Member

Research Section Member

Biomechanics Special Interest Group Member

Knee Special Interest Group Member

Hip Special Interest Group Member

New Investigator Special Interest Group Member

Running Special Interest Group Member

American Society of Biomechanics, 2007-present.

American College of Sports Medicine, 2007-present

### **Teaching:**

#### Current Teaching Responsibilities in the Entry:

PT 516: Movement System Exam and Evaluation I

PT 569: MSM II: Foot and Ankle

PT 576 Clinical Reasoning II

PT 676 Clinical Reasoning III

PT 679 Trends: Treatment of the Injured Runner