

## Curriculum Vitae

### BIOGRAPHICAL

**Name:** G. Kelley Fitzgerald, PhD, PT, FAPTA

**Title:**

Associate Dean of Graduate Studies, School of Health and Rehabilitation Sciences  
Professor, Department of Physical Therapy, School of Health and Rehabilitation Sciences  
Professor, University of Pittsburgh Clinical and Translational Science Institute  
Director, Physical Therapy Clinical and Translational Research Center, University of Pittsburgh

**Business Address:** University of Pittsburgh, Department of Physical Therapy, School of Health and Rehabilitation Sciences, 6035 Forbes Tower, Pittsburgh, PA 15260.

**Telephone:** 412-383-6643

**Fax:**412-648-5970

**Email:** [kfitzger@pitt.edu](mailto:kfitzger@pitt.edu)

### EDUCATION AND TRAINING

#### Undergraduate

1975 to 1980	University of Illinois, Champaign-Urbana, IL.	B.S., 1980	Physical Education
1980 to 1982	University of Health Sciences/Chicago Medical School, North Chicago, IL.	B.S., 1982	Physical Therapy

#### Graduate

1987 to 1990	Virginia Commonwealth University, Medical College of Virginia, Richmond, VA.	M.S., 1990	Biomechanics
1992 to 1998	MCP/Hahnemann University, Philadelphia, PA.	PhD, 1998	Orthopaedic Physical Therapy

### APPOINTMENTS AND POSITIONS

#### Academic

1990 to 1997	Hahnemann University, Department of Physical Therapy, Philadelphia, PA	Assistant Professor
1998 to 1998	University of Delaware, Department of Physical Therapy, Newark, DE	Visiting Assistant Professor
1998 to 2004	University of Pittsburgh, Department of Physical Therapy, Pittsburgh, PA	Assistant Professor
2004 to 2012	University of Pittsburgh, Department of Physical Therapy, Pittsburgh, PA	Associate Professor
2012 to Present	University of Pittsburgh, Department of Physical Therapy, Pittsburgh, PA	Professor
2009 to Present	University of Pittsburgh, Clinical and Translational Science Institute	Associate Professor
2009 to Present	University of Pittsburgh, Physical Therapy Clinical and Translational Research Center	Director
2012 to Present	University of Pittsburgh, Physical Therapy Clinical and Translational Research Center	Professor
2015 to Present	University of Pittsburgh, School of Health and Rehabilitation Sciences	Associated Dean of Graduate Studies

### **Non-Academic Positions**

1982 to 1983	Good Samaritan Medical Center - South Campus, Milwaukee, Wi.	Staff Physical Therapist
1983 to 1985	Sacred Heart Rehabilitation Hospital, Milwaukee, Wi.	Staff Physical Therapist
1985 to 1986	Sacred Heart Rehabilitation Hospital, Milwaukee, Wi.	Clinical Supervisor, Head Injury Unit
1986 to 1987	Milwaukee Medical Clinic, Milwaukee, Wi	Sports Physical Therapist
1988 to 1990	Medical College of Virginia Hospitals, Richmond, Va.	Staff Physical Therapist

### **CERTIFICATION AND LICENSURE**

**Board Certified Specialist in Orthopaedic Physical Therapy** American Board of Physical Therapy Specialties

1992 to 2002, Recertification  
in 2002 to present.

**License to Practice Physical Therapy** Department of State Bureau of Professional and Occupational Affairs Commonwealth of Pennsylvania

### **MEMBERSHIPS IN PROFESSIONAL AND SCIENTIFIC SOCIETIES**

1980 to Present American Physical Therapy Association.  
1990 to Present Orthopaedic Section/American Physical Therapy Association.  
1990 to Present Research Section/American Physical Therapy Association.  
2001 to Present Association of Rheumatology Health Professionals of the American College of Rheumatology.  
2008 to Present Osteoarthritis Research Society International.

### **HONORS**

1987 A.D. Williams Scholarship, Virginia Commonwealth University  
1995 Alpha Eta Honor Society for Allied Health Professions  
2001 Dorothy Briggs Memorial Scientific Inquiry Award, American Physical Therapy Association  
2002 Manuscript Reviewer of the Year Award, *Physical Therapy*, The Journal of the American Physical Therapy Association.  
2009 Catherine Worthingham Fellow of the American Physical Therapy Association  
2011 Jules M. Rothstein Golden Pen Award for Scientific Writing, American Physical Therapy Association

### **PUBLICATIONS**

#### **Refereed Articles**

**Fitzgerald GK**, Wynveen KJ, Rheault W, Rothschild B. Objective assessment with establishment of normal values for lumbar spinal mobility. *Physical Therapy*, 63, 1776-1781. 1983

**Fitzgerald GK**, Rothstein JM, Mayhew TM, Lamb RL. Exercise induced muscle soreness after concentric and eccentric isokinetic muscle contractions. *Physical Therapy*, 71, 505-513. 1991

**Fitzgerald GK**, Newsome DM. Treatment of a large infected thoracic spine wound using high voltage pulsed monophasic current. *Physical Therapy*, 73, 355-360. 1993.

**Fitzgerald GK**, McClure PW, Beattie P, Riddle DL. Issues in determining treatment effectiveness of manual therapy. *Physical Therapy*, 74, 227-233, 1994.

**Fitzgerald GK**, McClure PW. Reliability of measurements obtained with four tests for patellofemoral alignment. *Physical Therapy*, 75, 84-92, 1995.

Esola MA, McClure PW, **Fitzgerald GK**, Siegler S. Analysis of lumbar and hip motion during forward and backward bending in subjects with and without a history of low back pain. *Spine*, 21, 71-77, 1996.

Snyder-Mackler L, **Fitzgerald GK**, Bartolozzi A, Ciccotti M. Passive knee joint laxity and functional outcome. *American Journal of Sportsmedicine*, 25(2), 191-195, 1997.

**Fitzgerald GK**. Open vs closed kinematic chain exercise: Issues in knee rehabilitation after ACL reconstruction. *Physical Therapy*, 77,1747-1754, 1997.

Kietrys D, McClure PW, **Fitzgerald GK**. The relationship between head and neck posture and VDT screen height in keyboard operators. *Physical Therapy*. 78(4) 395-403, 1998.

**Fitzgerald GK**, Axe MJ, Snyder-Mackler L. A decision-making scheme for returning patients to high level activity with non-operative treatment after anterior cruciate ligament rupture, *Knee Traumatology, Arthroscopy and Sports*. 8, 76-82, 2000

**Fitzgerald GK**, Axe MJ, Snyder-Mackler L. The efficacy of perturbation training in non-operative anterior cruciate ligament rehabilitation programs for physically active individuals. *Physical Therapy*. 80(2) 128-140, 2000

**Fitzgerald GK**, Axe MJ, Snyder-Mackler L Proposed practice guidelines for non-operative anterior cruciate ligament rehabilitation. *Journal of Orthopaedic and Sports Physical Therapy*. 30, 194-203, 2000.

**Fitzgerald GK**. Considerations for evaluation and treatment of overuse tendon injuries. *Athletic Therapy Today*. 5, 14-19, 2000.

Irrgang JJ, **Fitzgerald GK**. Rehabilitation of multiple ligament injuries. *Clinics in Sports Medicine*. 19, 545-571, 2000.

Chmielewski TL, Rudolph KS, **Fitzgerald GK**, Axe MJ, Snyder-Mackler L. Biomechanical evidence supporting a differential response to acute ACL injury. *Clinical Biomechanics*. 2001;16:586-591.

**Fitzgerald GK**, Delitto A. Considerations for planning and conducting clinic-based research in physical therapy. *Physical Therapy*. 2001;81:1446-1454

**Fitzgerald GK**, Lephart SM, Hwang JH, Wainner RS. Hop tests as predictors of dynamic knee stability. *Journal of Orthopaedic and Sports Physical Therapy*. 2001;31:588-597

**Fitzgerald GK**, Childs JD, Ridge TM, Irrgang JJ. Agility and perturbation training for a physically active individual with knee osteoarthritis. *Physical Therapy*. 2002; 82: 373-382

**Fitzgerald GK**, Piva SR, Irrgang JJ. A Modified High Intensity Neuromuscular Electrical Stimulation Protocol for Quadriceps Strength Training Following Anterior Cruciate Ligament Reconstruction. *J Orthop Sports Phys Ther* 2003; 33: 492-501.

**Fitzgerald GK**, Piva SR, Irrgang JJ, Bouzubar F, Starz TW. Quadriceps Activation Failure as a Moderator of the Relationship Between Quadriceps Strength and Physical Function in Individuals with Knee Osteoarthritis. *Arthritis Care and Research*. 2004; 51:40-48.

**Fitzgerald GK**, Piva SR, Irrgang JJ. Reports of Joint Instability in Knee Osteoarthritis: Its Prevalence and Relationship to Physical Function. *Arthritis Care and Research*. 2004;51:941-948.

Piva SR, **Fitzgerald GK**, Irrgang JJ, Bouzubar F, Starz TW. Get Up and Go Test in Patients with Knee Osteoarthritis. *Archives of Physical Medicine and Rehabilitation*. 2004; 85: 284-289.

Childs JD, Sparto PJ, **Fitzgerald GK**, Bizzini M, Irrgang JJ. Alterations in lower extremity movement and muscle activation patterns in individuals with knee osteoarthritis. *Clin Biomech (Bristol, Avon)*. 2004; 19(1): 44-49.

Lyons CL, Robb JB, Irrgang JJ, **Fitzgerald GK**. Differences in quadriceps femoris muscle torque when using a clinical electrical stimulator versus a portable electrical stimulator. *Physical Therapy*. 2005;85:44-51.

**Fitzgerald GK**. Therapeutic exercise for knee osteoarthritis: considering factors that may influence outcome. *Europa Medicophysica*. 2005;41:163-171

Piva SR, **Fitzgerald GK**, Irrgang JJ, Jones S, Hando BR, Browder DA, Childs JD. Reliability of measures of impairments associated with patellofemoral pain syndrome *BMC Musculoskeletal Disorders* 2006, 7:33

Rabin A, Irrgang JJ, **Fitzgerald GK**. The Intertester Reliability of the Modified Scapular Assistance Test. *J Orthop Sports Phys Ther*. 2006;36:653-660.

**Fitzgerald GK.** Invited Editorial: Examining the consequences of rehabilitation interventions on disease progression and functional decline: Is function really the only thing that matters? *Arth Rheum (Arthritis Care and Research)* 2006;55:687-689.

**Fitzgerald GK.** Invited Editorial: Focus and value added: The new case report. *Phys Ther.* May 2007

Piva SR, Goodnite A, Azuma K, Woollard JD, Goodpaster GH, Wasko M-C, **Fitzgerald GK.** Neuromuscular Electrical Stimulation for Individuals with Rheumatoid Arthritis – Multiple-Patient Case Report. *Phys Ther* 2007;87:1064-77.

Schmidt LC, **Fitzgerald GK,** Reisman AS, Rudolph KS. Instability, laxity and physical function in patients with medial knee osteoarthritis. *Phys Ther.* 2008;88:1506-1516.

Piva SR, **Fitzgerald GK,** Irrgang JJ, Fritz JM, Wisniewski S, McGinty GT, Childs JD, Domenech MA, Jones S, Delitto A. Associates of physical function and pain in patients with patellofemoral pain syndrome *Arch Phys Med Rehabil.* 2009;90:285-295.

Ambrosio F; Lexell J, Kadi F, **Fitzgerald GK,** Boninger ML, Huard J. The effect of muscle loading on skeletal muscle regenerative potential: an update of current research findings relating to aging and neuromuscular pathology. *Am J Phys Med Rehabil.* 2009;88:145-155.

Piva SR, Gil AB, Moore C, **Fitzgerald GK.** Responsiveness of the Activities of Daily Living Scale of the Knee Outcome Survey and Numeric Pain Rating Scale in Patients with Patellofemoral Pain. *J Rehab Med.* 2009;41:129-135.

Ambrosio F, Ferrari RJ, **Fitzgerald GK,** Carvell G, Boninger ML, Huard J. Functional overloading of the extensor digitorum longus muscle enhances muscle-derived stem cell contribution to the contractile properties of mouse dystrophic skeletal muscle. *Arch Phys Med Rehabil.* 2009;90:66-73.

Piva SR, Childs JD, Klucinec BM, Irrgang JJ, Almeida GJ, **Fitzgerald GK.** Patella fracture during rehabilitation after bone-patellar-tendon bone anterior cruciate ligament reconstruction: Two case reports. *J Orthop Sports Phys Ther.* 2009;39:278-286.

Scopaz KA, Piva SR, Gil AB, Woollard JD, Oddis CV, **Fitzgerald GK.** The Effect of Baseline Quadriceps Activation on Changes in Quadriceps Strength After Exercise Therapy in Patients with Knee Osteoarthritis. *Arthritis Care and Research.* 2009;61: 951-957. PMC 2732991

Scopaz KA, Piva SR, Wisniewski S, **Fitzgerald GK.** The Relationships of Fear, Anxiety, and Depression with Physical Function in Patients with Knee Osteoarthritis. *Archives of Phys Med.* 2009;90:1866-1873.

Piva SR, Gil AB, Almeida GJM, DiGioia AM, Levison TJ, **Fitzgerald GK.** A Balance Exercise Program Appears to Improve Function for Patients with Total Knee Arthroplasty: a Randomized Clinical Trial. *Phys Ther.* 2010;90:880-894. PMC 2879033

Ambrosio F, Ferrari RJ, Distefano G, *Plassmeyer* JM, Carvell GE, Deasy BM, Boninger ML, **Fitzgerald GK**, Huard J. The Synergistic Effect of Treadmill Running on Stem-cell Transplantation to Heal Injured Skeletal Muscle. *Tissue Eng Part A*. 2010;16:839-849. PMC 2862616

Almeida GJD, Schroeder CA, Gil AB, **Fitzgerald GK**, Piva SR. Inter-rater reliability and validity of the stair ascend/descend test in individuals with total knee arthroplasty *Archives of Physical Medicine and Rehabilitation*. *Arch Phys Med Rehabil*. 2010; 91:932-938. PMC 2892160

Hile ES, **Fitzgerald GK**, Studenski SA. Incident Persistent Mobility Disability after Neurotoxic Chemotherapy: A Case Report. *Phys Ther*. 2010;90:1649-1657.

Piva SR, Almeida GJD, Gil AB, **Fitzgerald GK**. Contribution of Hip Abductor Strength to Physical Function in Patients with Total Knee Arthroplasty. *Phys Ther*. 2010;91:225-233.

Ambrosio F, Wolf SL, Delitto A, **Fitzgerald GK**, Badylak SF, Boninger ML, Russell AJ. The Emerging Relationship Between Regenerative Medicine and Physical Therapeutics. *Phys Ther*. 2010;90:1807-1814.

**Fitzgerald GK**, Piva SR, Gil AB, Wisniewski SR, Oddis CV, Irrgang JJ. Agility and perturbation training techniques in exercise therapy for improving pain and function in subjects with knee osteoarthritis: A randomized clinical trial. *Phys Ther*. 2011;91:452-469. PMCID: PMC3070919

Woollard JD, Gil AB, Sparto P, Kwok CK, Piva SR, Farrokhi S, Powers CM, **Fitzgerald GK**. Change in Knee Cartilage Volume in Individuals Completing a Therapeutic Exercise Program for Knee Osteoarthritis. *J Orthop Sports Phys Ther*. 2011;41(10):708-22. PMC3383656

Riddle DL, Kong X, **Fitzgerald GK**. Psychological Health Impact on Two-Year Changes in Pain and Function in Persons with Knee Pain: Data from the Osteoarthritis Initiative. *Osteoarthritis Cartilage*. 2011 Sep;19(9):1095-101 PMCID: PMC3159740

Teixeira PEP, Piva SR, **Fitzgerald GK**. The effects of impairment-based exercise on specific self-reported functional task performance in individuals with knee osteoarthritis. *Phys Ther* 2011;91: 1752-65. PMCID: PMC3229042

Farrokhi S, **Fitzgerald GK**. The Role of Physical Activity and Therapeutic Exercise in Development and Management of Knee Osteoarthritis. *J Clin Outcome Manag* 2012;19:1-10.

Farrokhi S, Tashman S, Gil AB, Klatt BA, **Fitzgerald GK**. Are the kinematics of the knee joint altered during the loading response phase of gait in individuals with concurrent knee

osteoarthritis and complaints of joint instability? A Dynamic Stereo X-ray Study. *Clin Biomech.* 2012; 27:384-389. PMC3289733

Williams VJ, Piva SR, Irrgang JJ, Crossley C, **Fitzgerald GK**. Comparison of reliability and responsiveness-reported clinical outcome measures in knee osteoarthritis rehabilitation. *J Orthop Sports Phys Ther* 2012;42:716-723. PMC3435439

Ambrosio F, **Fitzgerald GK**, Ferrari R, Distefano G, Carvell G. A murine model of muscle training by neuromuscular electrical stimulation. *J Vis Exp.* 2012 May 9;(63) PMC3468190

**Fitzgerald GK**, White D, Piva SR. Associations for change in physical and psychological factors and treatment response following exercise in knee osteoarthritis: An exploratory study. *Arthritis Care Res.* 2012;64:1673-1680. PMC3448876

Farrokhi S, Piva SR, Gil AB, Oddis CV, Brooks MM, **Fitzgerald GK**. Severity of coexisting patellofemoral disease is associated with increased impairments and functional limitations in patients with knee osteoarthritis. *Arthritis Care and Res.* 2013; 65:544-51. PMC3562754

Farrokhi S, Rainis C, Tashman S, **Fitzgerald GK**. A biomechanical perspective on physical therapy management of knee osteoarthritis. *J Orthop Sports Phys Ther.* 2013; 43:600-619.

Piva SR, Lasinski S, Almeida GJM, **Fitzgerald GK**, Delitto A. Disability and catastrophising predict high doses of neuromuscular electrical stimulation in subjects with rheumatoid arthritis. *Physiotherapy Practice and Research.* 2013; 34:57-66.

Susko AM, **Fitzgerald GK**. The pain-relieving qualities of exercise in knee osteoarthritis. *Open Access Rheumatology: Research and Reviews.* 2013; 5: 81-91

Pinto D, Robertson MC, Abbott JH, Hansen P, Campbell AJ, MOA Trial Team (**Fitzgerald GK** was member of the MOA Trial Team). Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee. 2: economic evaluation alongside a randomized clinical trial. *Osteoarthritis Cartilage.* 2013;21:1504-1513.

Khoja SS, Susko AM, Josbeno DA, Piva SR, **Fitzgerald GK**. Comparing physical activity programs for managing osteoarthritis in overweight or obese patients. *J Comparative Effectiveness.* 2014; 3:283-299.

Marcum Z, Zhan H, Perera S, Moore C, **Fitzgerald GK**, Weiner D. Correlates of gait speed in advanced knee osteoarthritis. *Pain Medicine.* 2014;15:1334-1342. PMC4693145

Farrokhi S, Voycheck CA, Klatt BA, Gustafson JA, Tashman S, **Fitzgerald GK**. Altered tibiofemoral joint contact mechanics and kinematics in patients with knee osteoarthritis and episodic complaints of joint instability. *Clin Biomech.* 2014;29:629-635. PMC4111962

Piva SR, Susko AM, Khoja SS, Josbeno DA, **Fitzgerald GK**, Toledo FGS. Links between Osteoarthritis and Diabetes and Implications for Management from a Physical Activity



Perspective. *Clin Geriatr Med.* 2014;31:67-87.

Farrokhi S, O'Connell M, **Fitzgerald GK**. Altered gait biomechanics and increased knee-specific impairments in patients with coexisting tibiofemoral and patellofemoral osteoarthritis. *Gait and Posture* 2015;41:81-85. PMC4267982

Bouzubar FF, **Fitzgerald GK**, Sparto P, Irrgang JJ. Quadriceps fatigue test: Test-retest reliability study and relationship to quadriceps activation failure. *Physiotherapy Research and Practice.* 2015;36:65-72.

Farrokhi S, O'Connell M, Gil AB, Sparto PJ, **Fitzgerald GK**. Altered gait characteristics in patients with knee osteoarthritis and self-reported complaints of instability. *J Orth Sport Phys Ther.* 2015;23: 803-814

Gustafson JA, Robinson ME, **Fitzgerald GK**, Tashman S, Farrokhi S. Knee motion variability in patients with knee osteoarthritis: the effect of self-reported instability. *Clin Biomech.* 2015;30:475-480. PMC4428966

**Fitzgerald GK**, Hinman RS, Zeni J, Risberg MA, Snyder-Mackler L, Bennell KL. Design and conduct of clinical trials for rehabilitation in people with osteoarthritis: recommendations from a task force of the osteoarthritis research society international. *Osteoarthritis Cartilage.* 2015;23:803-814.

Farrokhi S, Gustafson JA, Chuang W-N, **Fitzgerald GK**, Tashman S. Altered Frontal and Transverse Plane Tibiofemoral Kinematics and Patellofemoral Malalignments During Downhill Gait in Patients with Mixed Knee Osteoarthritis. *J Biomech,* 2015;48:1707-1712. PMC4521908

Farrokhi S, Voycheck CA, Gustafson JA, **Fitzgerald GK**, Tashman S. Knee joint mechanics during downhill gait and its relationship with varus/valgus motion and muscle strength in patients with knee osteoarthritis. *The Knee.* 2015, in press.

Farrokhi S, Chen Y-F, Piva SR, **Fitzgerald GK**, Jeong J-H, Kwok CK. The influence of knee pain location on symptoms, functional status and knee-related quality of life in older adults with chronic knee pain: data from the Osteoarthritis Initiative. *Clin J Pain.* 2015, Aug 24 [Epub ahead of print]. PMC4766069

Abbott JH, Chapple CM, **Fitzgerald GK**, Fritz JM, Childs J, Harcombe H, Stout K. The incremental effects of manual therapy or booster sessions in addition to exercise therapy for knee osteoarthritis: A randomized clinical trial. *JOSPT.* 2015;45:975-983

O'Connell M, Farrokhi S, **Fitzgerald GK**. The role of knee joint moments and knee impairments on self-reported knee pain during gait in patients with knee osteoarthritis. *Clin Biomech.* 2016;31:40-46.

Almeida GJ, Irrgang JJ, **Fitzgerald GK**, Jakicic JM, Piva SR. Reliability of physical activity measures during free-living in individuals after total knee arthroplasty. *Phys Ther.* 2016;96: 898-

907.

Gustafson JA, Gorman S, **Fitzgerald GK**, Farrokhi S. Alterations in walking knee joint stiffness in individuals with knee osteoarthritis and self-reported knee instability. *Gait and Posture*. 2016; 43:210-215.

Karp JK, Dew MA, Wahed AS, **Fitzgerald K**, Bolon CA, Weiner DK, Morse JQ, Albert SM, Butters MA, Gildengers AG, Reynolds CF III: Challenges and solutions for depression prevention research: methodology for a depression prevention trial for older adults with knee arthritis and emotional distress. *American Journal of Geriatric Psychiatry*, 2015. NIHMS 738976 (in press)

Piva SR, Farrokhi S, Almeida G, **Fitzgerald GK**, Levison TJ, DiGioia AM. Dose-associated changes in gait parameters in response to exercise programs after total knee arthroplasty: Secondary analysis of two randomized studies. *Int. J Phys Med Rehabil*. 2016 (in press)

**Fitzgerald GK**, Fritz JM, Childs JD, Brennan G, Talisa V, Gil AB, Neilson BD, Abbott JH. Exercise, manual therapy, and use of booster sessions in physical therapy for knee osteoarthritis: a multi-center factorial randomized clinical trial. *Osteoarthritis Cartilage*. 2016;24:1340-1349

Bove AM, Lynch AD, DePaul SM, Terhorst L, Irrgang JJ, **Fitzgerald GK**. Test-Retest Reliability of Ratings of Perceived Exertion and Agreement with 1-Repetition Maximum in Adults. *J Orthop Sports Phys Ther* 2016 (in press)

**Reviews, Invited Published Papers, Proceedings of Conferences and Symposia, Monographs, Books, and Book Chapters**

**Fitzgerald GK**. Delayed onset muscle soreness: Implications for rehabilitation and clinical research. *Critical Reviews in Physical Medicine and Rehabilitation*. 5, 291-299. 1993

**Fitzgerald GK**, Michlovitz SL. Modality Therapy. In: Kelley and Clark, ed., *Orthopedic Therapy of the Shoulder*. Philadelphia, PA, Lippincott, 1994.

McEwen I. (Ed) *Writing Case Reports. A How-to Manual For Clinicians*. American Physical Therapy Association Publications, Alexandria, VA, 1996. Contributing Author.

Rudolph K, **Fitzgerald GK**, Snyder-Mackler L. Restoration Of Dynamic Stability In The ACL Deficient Knee. In Lephart SM, Fu FH (Ed), *Proprioception and Neuromuscular Control in Joint Stability*. Human Kinetics, Champaign, IL. 2000: 393-404.

Chmielewski TL, Rudolph KS, Axe MJ, **Fitzgerald GK**, Snyder-Mackler L. Movement Patterns of Individuals with Good Potential to Dynamically Stabilize Their Knees After ACL Rupture. In Hascall VC and Kuettner KE (Ed) *The Many Faces of Osteoarthritis*. Birkhauser Verlag Basel/Switzerland, 2002: 461-463.

**Fitzgerald GK**, Irrgang JJ. Post-operative rehabilitation following articular cartilage procedures of the knee. In Brotzman B. (Ed) *Clinical Orthopaedic Rehabilitation*. Mosby Publishing. 2003

**Fitzgerald GK**, Oatis C. The role of physical therapy in the management of knee osteoarthritis. *Curr Opin Rheumatol*. 2004; 16:143-147.

**Fitzgerald GK**, Delitto A. Neuromuscular electrical stimulation for muscle strength training. In Rainoldi A, Minetto MA, Merletti R (Ed) *Biomedical Engineering in Exercise and Sports*. Edizioni Minerva Medica, Torino, Italy, 2006. 199-207

Krohn K, **Fitzgerald GK**. Nonpharmacologic, nonsurgical management of knee osteoarthritis: knee bracing, foot orthotics, weight loss. *Journal of Musculoskeletal Medicine*. 2006;23(6): 430-443.

Krohn K, **Fitzgerald GK**. Nonpharmacologic, nonsurgical management of knee osteoarthritis: exercise. *Journal of Musculoskeletal Medicine*. 2006;23(7):505-509.

**Fitzgerald GK**, Baker N. *Principles of Rehabilitation: Physical and Occupational Therapy*. In Hochberg MJ (Ed) *Rheumatology*, 5<sup>th</sup> Edition. Elsevier, Philadelphia, PA 2010.

**Fitzgerald GK**. The Knee – Common Ligamentous Knee Pathology; e-Learning Module, Universal Musculoskeletal Curriculum, Evidence in Motion, Louisville, KY, 2012

**Fitzgerald GK**. The Knee – Disease Related Issues in Osteoarthritis; e-Learning Module, Universal Musculoskeletal Curriculum, Evidence in Motion, Louisville, KY, 2012

**Fitzgerald GK**. The Knee – Factors That May Affect the Outcome of Rehabilitation for Knee Osteoarthritis; e-Learning Module, Universal Musculoskeletal Curriculum, Evidence in Motion, Louisville, KY, 2012

Farrokhi S, Baker NA, **Fitzgerald GK**. *Principles of Rehabilitation: Physical and Occupational Therapy*. In Hochberg MJ (Ed) *Rheumatology*, 6<sup>th</sup> Edition. Elsevier, Philadelphia, PA 2015.

Bove A, **Fitzgerald GK**. Updated in knee OA management. *The Rheumatologist*. 2016;10: 34-36.

### **Published Abstracts**

**Fitzgerald GK**, Rothstein JM, Mayhew TM, Lamb RL. Exercise induced muscle soreness after concentric and eccentric isokinetic muscle contractions. Presentation: *Proceedings of International Society of Electrophysiologic Kinesiologists, 8th International Congress*. Baltimore 8/14/90

**Fitzgerald GK**, McClure PW. Reliability of four tests for patellofemoral alignment. *JOSPT* 19, 61, 1994.

McKenna M, McClure PW, **Fitzgerald GK**. A comparison of the effects of cervical mobilization and active exercise on cervical range of motion and pain. *JOSPT*, 19, 63, 1994.

Esola MA, McClure PW, **Fitzgerald GK**, Siegler S. Analysis of lumbar and hip motion during forward and backward bending in subjects with and without a history of low back pain. Presented at the 1995 Combined Sections Meeting in Reno NV, 2/95.

Snyder-Mackler L, **Fitzgerald GK**, Bartolozzi A, Ciccotti M. Passive knee joint laxity and functional outcome. American Academy of Orthopaedic Surgeons 1996 Annual meeting, Atlanta, GA.

**Fitzgerald GK**, Axe MJ, Lear L, Snyder-Mackler L. Development and testing of a screening examination to distinguish rehabilitation candidates from non-copers early after ACL rupture. American Academy of Orthopaedic Surgeons 1998 Annual meeting, New Orleans, LA

**Fitzgerald GK**, Snyder-Mackler L, Axe MJ. A comparison of two non-operative ACL rehabilitation programs for highly active individuals. JOSPT, January, 1999.

Piva S, **Fitzgerald GK**, Irrgang JJ, McGinty G. Decreasing the amplitude of the electrical stimulus during the burst-superimposition maximum voluntary quadriceps isometric force test. Presented at the 2001 Combined Sections Meeting of the APTA. San Antonio, TX, 2/2001.

**Fitzgerald GK**, Childs JD, Ridge TM, Irrgang JJ. Coordination and agility training in individuals with knee osteoarthritis: a case report. Presented at the 2002 Combined Sections Meeting of the APTA, Boston, MA, 2/2002.

**Fitzgerald GK**, Piva SR, Irrgang JJ, Bouzabar F, Starz TW. Quadriceps Activation Failure as a Moderator of the Relationship Between Quadriceps Strength and Physical Function in Individuals with Knee Osteoarthritis. *Arthritis and Rheumatism*. 2002;46: Supplement S198, #447.

Irrgang JJ, Childs JD, Sparto PJ, **Fitzgerald GK**, Bizzini M. Alterations in lower extremity movement and muscle activation patterns in individuals with knee osteoarthritis. *Arthritis and Rheumatism*. 2002;46: Supplement S143, #294.

Piva SR, **Fitzgerald GK**, Irrgang JJ, Bouzabar F, Starz TW. Reliability and validity of the get up and go test in patients with knee osteoarthritis. *Arthritis and Rheumatism*. 2002;46: Supplement S228, #534.

**Fitzgerald GK**, Piva SR, Irrgang JJ. The effectiveness of neuromuscular electrical stimulation (NMES) for quadriceps strengthening in post-operative ACL rehabilitation: standard vs criterion-based application. *J Orthop Sports Phys Ther* 2003;33:A-9.

Childs JD, Sparto PJ, **Fitzgerald GK**, Bizzini M. The relationship between alterations in lower extremity movement and muscle activation patterns in individuals with knee osteoarthritis and self-report and performance-based measures of function and disability. *J Orthop Sports Phys Ther* 2003;33:A-11.

Lyons CL, Robb JB, Rabin A, Enseki K, Irrgang JJ, **Fitzgerald GK**. Clinical versus portable neuromuscular electrical stimulators: A comparison of quadriceps femoris torque production capability. *J Orthop Sports Phys Ther*. 2004; 34:A2

**Fitzgerald GK**, Piva SR, Irrgang JJ. The prevalence of self-reported joint instability in knee osteoarthritis and its relationship to physical function. *J Orthop Sports Phys Ther*. 2004; 34:A2

**Fitzgerald K**, Goodnite EA, Azuma K, Goodpaster B, Wasko M-C. Neuromuscular electrical stimulation (NMES) for quadriceps strengthening in an individual with Rheumatoid Arthritis. *Arthritis and Rheumatism*, 52 (9) Supplement. 2005, S436.

Bouzubar FF, Irrgang JJ, **Fitzgerald GK**, Sparto P, Starz TW. Self-reported fatigue in individuals with knee osteoarthritis. *Arthritis and Rheumatism*, 52 (9) Supplement. 2005, S715.

Piva SR, **Fitzgerald GK**, Irrgang JJ, Jones S, Hando B, Childs J. Reliability of measures of impairments associated with patellofemoral pain syndrome. *J Orthop Sports Phys Ther*. 2006; 36:A3.

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Scopaz KA, Piva SR, **Fitzgerald GK**. The mediating effect of knee pain on the relationship of biobehavioral factors to function in patients with knee osteoarthritis. *Arth Rheum*. 2007;56 (supplement): S511.

Altubasi IM, Teixeira PEP, Piva SR, **Fitzgerald GK**. Knee Joint Laxity, as Measured by Stress Radiograph, does not alter the Relationship between Strength and Function in Patients with Knee OA. *Arthritis and Rheumatism* 2008; 58 (9): S439 - 735.

Scopaz KA, Piva SR, **Fitzgerald GK**. The Relationship of Fear, Anxiety, and Depression with Physical Function in Patients with Knee Osteoarthritis. *Arthritis and Rheumatism* 2008; 58 (9): S440 - 736.

Piva SR, Gil AB, Almeida GJM, **Fitzgerald GK**. Improvements in Muscle Impairments are Associated with Improvement in Physical Function in Patients with Total Knee Arthroplasty. *Arthritis and Rheumatism* 2008; 58 (9): S596 - 1151.

Teixeira PEP, **Fitzgerald GK**, Gil AB, Almeida GJM, Piva SR. Association Between Hip Muscles Strength and Physical Function in Individuals with Total Knee Arthroplasty. *Arthritis and Rheumatism* 2008; 58 (9): S892 - 1977.

Ferrari R., Locke C., Nozaki M., **Fitzgerald GK**, Carvel GE., Boninger ML., Huard J., Ambrosio F. Motor unit activation increases the efficacy of stem cell therapy to heal injured skeletal muscle. **Orthopaedic Research Society, San Francisco, California, USA, March 2008**

Distefano, G., Plassmeyer, J., Carvell, G.E., **Fitzgerald, GK**, Huard, J., Ambrosio, F. The effect of electrical stimulation on the myogenic capacity of stem cells transplanted into dystrophic muscle. **Federation of Brazilian Societies for Experimental Biology, Fortaleza, Brazil May 2008**

Ferrari R., Distefano G., Nozaki M., **Fitzgerald GK**, Boninger M., Huard J., Ambrosio F. The relationship between vascularity and fibrosis formation after skeletal muscle injury. **International Society for Stem Cell Research, Philadelphia, Pennsylvania, USA, June, 2008,**

Ambrosio F., Plassmeyer J., Brown E., Deasy BM., Boninger ML., Goodpaster B., **Fitzgerald GK.**, Huard J. Neuromuscular electrical stimulation: The skeletal muscle fountain of youth? **Association of Academic Physiatrists, Colorado Springs, Colorado, USA, February 2009,**

Plassmeyer J., Groscoast D., Brown E., Goodpaster B., **Fitzgerald GK**, Boninger ML., Huard J., Ambrosio F. Neuromuscular electrical stimulation rejuvenates muscle stem cell regenerative potential. **Molecular mechanisms of aging and age-related diseases, Puerto Vallarta, Mexico, March 2009,**

Piva SR, Almeida GJM, Gil AB, Teixeira PEP, **Fitzgerald GK**. Effectiveness and Feasibility of a Balance Training Program Post Total Knee Arthroplasty -Pilot Randomized Trial. J Orthop Sports Phys Ther 2009; 39 (1): A29-30.

Almeida GJM, Gil AB, **Fitzgerald GK**, Piva SR. Asymmetries in Physical Impairments and Spatial-Temporal Parameters of Gait in Total Knee Arthroplasty. J Orthop Sports Phys Ther 2009; 39 (1): A48.

Teixeira PEP, Piva SR., **Fitzgerald GK**. Exercise Effects On Self-Reported Functional Tasks in Knee Osteoarthritis [abstract]. Arthritis Rheum 2009;60 Suppl 10 :1881 DOI: 10.1002/art.26955

Gil AB, Sparto PJ, Piva SR., **Fitzgerald GK**. The Influence of Hip Muscle Strength and Hip Frontal Plane Moment On the Knee Adduction Moment in People with Knee Osteoarthritis [abstract]. Arthritis Rheum 2009;60 Suppl 10 :1934 DOI: 10.1002/art.27007

Piva SR, Strudle N, Almeida GJM, Wasko MC, **Fitzgerald GK**, Delitto A. Associates of Tolerance to Neuromuscular Electrical Stimulation in Rheumatoid Arthritis. [abstract]. Arthritis Rheum 2009;60 Suppl 10.

Gil, AB, Sparto, PJ, Chambers, AJ, Cham, R, **Fitzgerald, GK**; Relationship between physical function and stiffened pattern of movement during gait in patients with knee osteoarthritis. Proceedings of the XIX Conference of International Society for Posture & Gait Research 2009; O.96; page 112.

Gil AB, Sparto PJ, Piva SR, **Fitzgerald GK**. Stiffened pattern of movement is associated with worse physical function in people with knee osteoarthritis. Osteoarthritis and Cartilage - September 2009 (Vol. 17Supplement 1, Pages S81-S82, DOI: 10.1016/S1063-4584(09)60158-8)

**Fitzgerald GK**, Piva SR, Wisniewski S, Gil AB. Effects of Two Exercise Approaches on Self-Reported Knee Instability in Subjects with Knee Osteoarthritis. *Osteoarthritis and Cartilage* - September 2009 (Vol. 17Supplement 1)

**Fitzgerald GK**, Piva SR, Wisniewski S. Clinical measures associated with self-reported knee instability in subjects with knee osteoarthritis (KOA). [abstract] *Arthritis Rheum.* 2010.

Maia Neto FJ, Almeida GJ, **Fitzgerald GK**, Piva SR. The Effect of an Exercise Program on Gait Asymmetry in Patients After Total Knee Arthroplasty. [abstract] *Arthritis Rheum.* 2010.

**Fitzgerald GK**, White DK, Piva SR. Associations between changes in impairments and treatment response following exercise therapy in subjects with knee osteoarthritis. *Osteoarthritis Cartilage.* 2012;17:S263

Farrokhi S, Rainis C, **Fitzgerald GK**, Tashman S. Dynamic Stereo X-Ray Evaluation of Knee Joint Mechanics During Downhill Walking in Subject with Knee Osteoarthritis [abstract] *Arthritis Rheum.* 2012

Rainis C, Farrokhi S, Tashman S, **Fitzgerald GK**. Altered Tibiofemoral Joint Contact Mechanics in Patients with Knee Osteoarthritis and Episodic Complaints of Joint Instability. *Orthopaedic Research Society.* 2013

Farrokhi S, O'Connell M, Gil A, **Fitzgerald GK**. Alterations in sagittal-plane knee joint kinematics and kinetics during gait in knee osteoarthritis patients with complaints of instability. *Osteoarthritis Research Society International.* April 2013.

O'Connell M, Farrokhi S, Gil A, **Fitzgerald GK**. Severity of coexisting patellofemoral osteoarthritis is associated with altered sagittal-plane gait biomechanics in patients with tibiofemoral osteoarthritis. *Osteoarthritis Research Society International.* April 2013.

Schlenk, E. A., Crowley-Lisowski, D., Twerski, S., Fallon, A., Sartore, A., Sereika, S., Rogers, J., **Fitzgerald, G. K.**, & Kwok, C. K. (2013). Relationships between self-efficacy, outcome expectancy, and outcomes in older adults with osteoarthritis of the knee and hypertension: Baseline results [Abstract]. *Arthritis Care and Research*, 65(10), S895

Gustafson JA, Farrokhi S, Tashman S, **Fitzgerald GK**. Increased Variability of Knee Motion in Patients with Knee Osteoarthritis and Complaints of Instability. *Orthopaedic Research Society.* March 2014.

Susko AM, DePaul SM, **Fitzgerald GK**. Correlation of 1-repetition maximum and ratings of perceived exertion in adults: Implications for strength training. *Osteoarthritis Research Society International.* April 2014.

**Fitzgerald GK**, Fritz JM, Childs JD, Brennan GB, Landsittel D, Abbott JH, Gil AB, Nielsen B. Exercise, Manual Therapy, and Use of Booster Sessions in Physical Therapy for Knee OA: A Multi-Center Randomized Clinical Trial. *ACR* 2014.

Farrokhi S, **Fitzgerald GK**, Tashman S. Knee Joint Contact Mechanics during Downhill Gait and its Relationship with Varus/Valgus Motion and Muscle Strength in Patients with Knee Osteoarthritis. CSM 2015.

Farrokhi S, Piva SR, **Fitzgerald GK**, Kwok CK. Association of pain location with symptoms, functional limitations, and knee related quality of life in patients with knee pain: data from the Osteoarthritis Initiative. CSM 2015.

O'Connell M, Farrokhi S, **Fitzgerald GK**. Biomechanical and Clinical Correlates of Self-reported Knee Pain during Gait in Patients with Knee Osteoarthritis. CSM 2015.

Gustafson JA, **Fitzgerald, GK**, Farrokhi S. Decreased dynamic knee joint stiffness in patients with knee osteoarthritis and complaints of instability. Orthopaedic Research Society. March 2015.

Bove AM, Smith KJ, Bise C, Fritz JM, Childs JD, Brennan G, Abbott JH, **Fitzgerald GK**. What is the most cost-effective physical therapy strategy to treat knee osteoarthritis? Arthritis Care and Research 2015.

### **Other**

Master of Science Thesis: Exercise Induced Muscle Soreness After Concentric and Eccentric Isokinetic Muscle Contractions. Virginia Commonwealth University/Medical College of Virginia, 1990

Doctoral Dissertation: Non-operative Anterior Cruciate Ligament Rehabilitation For Individuals Participating in High Level Physical Activity, MCP/Hahnemann University, 1998

## **PROFESSIONAL ACTIVITIES**

### **TEACHING**

#### **Current Teaching Responsibilities**

Course Director: PT 2029: Kinesiology. University of Pittsburgh, Department of Physical Therapy.

Course Director: HRS 2362 Advanced Musculoskeletal Examination and Treatment of the Lower Extremity. University of Pittsburgh, Department of Physical Therapy

Course Coordinator: HRS 3000: Doctoral Seminar:

Course Director: PT 2084/HRS 2384: Special Topics in Osteoarthritis

Lecturer: PT 2030: Anatomy, Entry Level Program: Functional Anatomy of the Knee, Functional



Anatomy of the Foot and Ankle

PT 2071, 2072, 2073: Group Instructor: Evidence-Based Practice Series. University of Pittsburgh, Department of Physical Therapy

### **Teaching in Other Departments/Institutions**

Fractures. University of Pittsburgh, Department of Occupational Therapy, School of Health and Rehabilitation Sciences. Spring 2002.

Orthopaedic Problems: Theoretical Principles of Functional Retraining. University of Pittsburgh, Department of Sports Medicine and Dietetics, School of Health and Rehabilitation Sciences. Spring 2001, 2002, 2003.

Visiting Professor: Functional Anatomy (Kinesiology and Biomechanics) Department of Physical Therapy, University of Delaware. Spring, 1998 semester.

Course Director: Kinesiology, Orthopaedic Physical Therapy, Entry Level Master's Program, Department of Physical Therapy, Allegheny University of the Health Sciences, Philadelphia, PA, Fall 1990 to Fall 1997.

Visiting Professor, Clinical Kinesiology. University of Illinois-Chicago. Jan 6-10, 1992; Jan 4-8, 1993, Jan 3-7, 1994. January 2-6, 1995. January 2-5, 1996. Course coordinator; Jules Rothstein PhD, PT

Introduction to Physical Therapy: 3rd Year Medical Students on Orthopedic Rotation Hahnemann University, School of Medicine Fall 1990 - Spring 1992.

### **Thesis Committees**

#### **University of Pittsburgh**

Chair of Committee: Ibrahim Altubasi, MS, PT. Doctoral Degree. "The effects of neuromuscular electrical stimulation on type II muscle fiber hypertrophy in aging muscle." Defended July 2011.

Chair of Committee: Jennifer Lias, MS, PT. Doctoral Degree. "Predictive factors of short and long term outcome following total knee arthroplasty." (Student dropped out of program)

Chair of Committee: Alexandra Gil, MS, PT. Doctoral Degree. "The relationship between gait variables and physical function in individuals with knee osteoarthritis." Defended September 2010.

Chair of Committee: Sara R. Piva, MS, PT. Doctoral Degree. "Association between impairments and function in response to physical therapy in individuals with patellofemoral pain syndrome." Defended, April 2005.

Member of Committee: Stephanie Di Stasi, MSPT. Doctoral Degree. University of Delaware. "The Fickle ACL deficient athlete: Investigation of the noncopper response to injury, surgery, and neuromuscular training. In progress

Member of Committee: Jason Woollard, MPT. Doctoral Degree. Derivation of a clinical prediction rule for maximizing the probability of successful arthroscopic subacromial decompression in patients with chronic subacromial impingement syndrome. In progress.

Member of Committee: Joseph Zenni, DPT. Doctoral Degree. University of Delaware. "Decreased Functional Ability and Altered Joint Loading with the Progression of Medial Compartment Knee Osteoarthritis." Defended, June 2008.

Member of Committee: Laura Schmitt, MPT. Doctoral Degree, University of Delaware. "The influence of laxity, instability, and alignment of the knee on physical function and motor patterns in individuals with knee osteoarthritis." Defended, June 2006.

Member of Committee: Fawzi Bouzubar, MS, PT. Doctoral Degree. "Self Reported Fatigue in Individuals with Knee Osteoarthritis." Defended, October 22, 2003

Member of Committee: Kevin Conley MS, ATC. Doctoral Degree. "Effects of Selected Modes of Prophylactic Support on Reflex Muscle Firing Following Dynamic Perturbation of the Ankle." Defended, April 2005.

Member of Committee: Cheryl Ferris, MS. ATC. Doctoral Degree. "The effect of trunk and hip neuromuscular and biomechanical characteristics upon the knee during a stop-jump task in males and females." Defended, May 23, 2003

### **MCP/Hahnemann University, Philadelphia, PA**

Chair of Committee: Melody Chamberlain, PT; "The effect of fatigue on muscle performance after ACL reconstructive surgery." Thesis defended on 11/10/94

Chair of Committee: David Ebaugh, PT; "Changes in quadriceps femoris strength between partial range and full range knee extension exercise." Thesis defended 4/96

Member of Committee: Maureen McKenna, PT; "The effects of cervical mobilization on range of motion and pain." Thesis defended on 4/20/93.

Member of Committee: Kathy Sawyer, PT; "The effects of therapeutic exercise on scapular position." Thesis defended 5/95

Member of Committee: Irene Mizobe, PT; "The relationship between isometric quadriceps muscle force output and functional ability in patients with knee instability." Thesis defended on 11/10/94.

Member of Committee: Marcia Esola, PT; "The relationship between lumbar spine and pelvic motion during forward bending in individuals with and without back pain." Thesis defended 6/94.

Member of Committee: Dave Kietrys, PT; "The relationship between head and neck posture, VDT screen height, and pain in keyboard operators". Thesis defended 11/95.

### **Clinical Mentor for Sports Physical Therapy Residency Program**

Tara Ridge, MPT and Erica Baum, MPT; Fall 1999, Spring 2000

Brian Klucinek, MS, PT, ATC; Fall 2000

Christian Lyons, MPT; Fall 2001

Joel Robb, MPT; Spring 2002

Alon Rabin, MPT; Fall 2002

Adam Eubanks, PT; Fall 2003, Spring 2004

Jennifer Swanson, DPT; Spring 2005

### **Advisor, Entry-Level Clinical Research Internships**

Derek Metsger: Fall 1999

Keelan Enseki: Fall 2000, Spring 2001

Lisa Curtis: Fall 2002, Spring 2003, Fall 2003

Matthew Guarino: Fall 2003

Colleen O'Hara: Fall 2004

Drew Breaky: Summer 2007

Timothy Zelch, Summer 2009

Matthew Janczak, Summer 2010

## **RESEARCH**

### **Grants Received**

<b>Years</b>	<b>Grant Title</b>	<b>Source</b>
1995 to 1996 <b>Principal Investigator</b>	Compensatory patterns in patients with knee instability. Doctoral Dissertation Award. \$5,000.00	Foundation for Physical Therapy Research, Inc.
1997 to 1998 <b>Principal Investigator</b>	Compensatory patterns in patients with knee instability. Doctoral Dissertation Award. \$4,600.00	Foundation for Physical Therapy Research, Inc.
1999 to 2001 <b>Principal Investigator</b>	High intensity electrical stimulation for quadriceps femoris strength training in post-operative anterior cruciate ligament rehabilitation. \$11,120.00	University of Pittsburgh, Central Research Development Fund.
1999 to 2000 <b>Principal Investigator</b>	High intensity electrical stimulation for quadriceps femoris strength training in post-operative anterior cruciate ligament rehabilitation. \$2,500.00	Section on Research, American Physical Therapy Association, Clinical Research Demonstration Project.
2000 <b>Principal Investigator</b>	High intensity electrical stimulation for quadriceps femoris strength training in post-operative anterior cruciate ligament rehabilitation. \$40,000.00	Foundation for Physical Therapy Research, Inc.
2000 to 2001 <b>Principal Investigator</b>	Quadriceps femoris muscle inhibition in patients with knee osteoarthritis. \$50,000.00	Arthritis Foundation, Western PA Chapter.
2001 to 2002 <b>Principal Investigator</b>	Gait adaptations in individuals with knee osteoarthritis. \$9,900.00	Orthopaedic Section, APTA, Clinical Research Grant Program.
2003 to 2004 <b>Principal Investigator</b>	Neuromuscular electrical stimulation in rheumatoid arthritis. \$6,500.00	EMPI, Inc.
2004 to 2008 <b>Principal Investigator</b>	Knee stability training in individuals with knee OA. \$1,425,000.00	National Institute of Arthritis and Musculoskeletal and Skin Diseases.

2007 to 2008 <b>Co- Investigator</b>	Validation of the knee function composite test: A Pilot Study. 65,000.00	Omerus Corporation
2008 to 2009 <b>Co-Principal Investigator</b>	Dynamic Arthrokinematic Profiles of Knee Instability in People with Knee Osteoarthritis. 25,000.00	National Center for Research Resources; University of Pittsburgh Clinical and Translational Science Institute, Basic to Clinical Collaborative Research Pilot Program.
2008 to 2009 <b>Co- Investigator</b>	Mechanotransduction for improved skeletal muscle functioning in aged individuals. 37,000.00	University of Pittsburgh Claude Pepper Center Pilot Study Program.
2010 to 2014 <b>Co- Investigator</b>	Promoting Physical Activity in Older Adults with Comorbidity 290,909.00	National Institute of Nursing Research.
2010 to 2015 <b>Principal Investigator</b>	Enhancing the Effectiveness of Physical Therapy for People with Knee Osteoarthritis 1,410,000.00	Agency for Health Research and Quality.
2011 – 2016 <b>Co- Investigator</b>	Reducing Pain; Preventing Depression	National Institute of Mental Health
2015-2020 <b>Co- Investigator</b>	Center of Excellence in Physical Therapy Health Services/Health Policy Research and Training (CoHSTAR)	

**Seminars and Invited Lectureships Related to Research Activity**

February, 1999.	Invited Speaker: Non-operative management of ACL injuries in physically active individuals.	Marquette Challenge Conference. University of Pittsburgh, Department of Physical Therapy.
June, 1999	Screening Patients With Acute ACL Rupture For Return To High Level Activity With Non-Operative Rehabilitation.	American Physical Therapy Association Annual Conference, Washington, DC.

February, 2000	Clinical Research Demonstration Project: High Intensity Electrical Stimulation for Quadriceps Strength Training in Post-Operative ACL Rehabilitation.	Combined Sections Meeting of the APTA. New Orleans, LA
May, 2000	Invited Speaker: “Innovations in Non-operative Rehabilitation of ACL Injuries”: “ Theoretical Considerations for Functional Re-training Programs”.	Ninth Panther International Sports Medicine Symposium, Pittsburgh, PA
October, 2000	Invited Speaker: Quadriceps Femoris Muscle Inhibition in Patients with Knee Osteoarthritis.	Western PA Chapter of the Arthritis Foundation Annual Meeting, Pittsburgh, PA
February, 2002	Invited Speaker: Clinical Research: Practical Solutions to Common Problems.	Combined Sections Meeting of the American Physical Therapy Association, Boston MA
April, 2002	Invited Speaker: The Institutional Review Board Process: A Reviewers Perspective.	University of Pittsburgh, School of Health and Rehabilitation Sciences, Doctoral Seminar
June, 2002	Invited Speaker: Foundation for Physical Therapy Research Grant Forum:Where does the money go?	Annual Conference of the American Physical Therapy Association. Cincinnati OH
October, 2002	Invited Speaker:Knee Instability in Individuals with Knee Osteoarthritis: Special Considerations for Rehabilitation.	37 <sup>th</sup> Annual Scientific Meeting of the Association of Rheumatology Health Professionals. New Orleans, LA
March, 2003.	Invited Speaker: Knee Instability in Individuals with Knee Osteoarthritis: Special Considerations for Rehabilitation.	Marquette Challenge Conference. University of Pittsburgh.
October 2004	Invited Speaker: Agility Training for the Arthritic Knee.	39 <sup>th</sup> Annual Scientific Meeting of the Association of Rheumatology Health Professionals. San Antonio,

TX

November 2005	Invited Speaker: Measuring the Impact of Therapeutic Exercise Interventions: Physical Function in Knee OA.	American College of Rheumatology: Evidence Based Rheumatology: Reducing the Prevalence and Impact of Arthritis Conference. San Diego, CA.
March 2006	Invited Speaker: Neuromuscular Electrical Stimulation for Muscle Strength Training.	Biomedical Engineering in Exercise and Sports Conference, Torino, Italy
December 2007	Keynote Speaker: Non-operative Management of Anterior Cruciate Ligament Injury: Maximizing A Successful Return to High Level Physical Activity	Southern Physiotherapist Symposium, Queenstown, New Zealand.
October 2008	Invited Speaker: Risk Factors for Functional Decline: Considerations for Planning Exercise Programs in Knee Osteoarthritis.	American College of Rheumatology Clinical Research Conference: Rehabilitation and Exercise Therapy
March 2010	Visiting Professor, “Knee Instability in Knee OA: In Pursuit of a Solution.”	Boston University Medical Center, Arthritis and Epidemiological Research Center, Boston MA
August 2010	“Knee Instability in Knee OA: In Pursuit of a Solution.”	University of Oslo, Sports Medicine, Oslo Norway.
September 2011	Keynote Speaker: “; 1)“Agility and perturbation training in patients with knee osteoarthritis: Experience from a randomized clinical trial”: 2)“The effects of impairment-based exercise on specific functional tasks in people with knee osteoarthritis”	Washington University in St. Louis, Department of Physical Therapy. Steven J Rose Clinical Research Symposium

### **Other Scientific Presentations Related to Research**

August, 1990.	Platform presentation: Exercise Induced Muscle Soreness after Concentric and	ISEK 90, 8th International Congress, International
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	Eccentric Isokinetic Muscle Contractions.	Society of Electrophysiologic Kinesiologists.
February, 1994.	Platform Presentation: Reliability of four tests for patellofemoral alignment.	Combined Sections Meeting of the APTA, New Orleans, LA.
March, 1998.	Platform Presentation: Development and testing of a screening examination to distinguish rehabilitation candidates from non-copers early after ACL rupture.	Annual Conference of American Academy of Orthopaedic Surgeons, New Orleans, LA
February, 1999.	Platform Presentation: A comparison of two non-operative ACL rehabilitation programs for highly active individuals.	Combined Sections Meeting of the APTA, Seattle, WA.
February, 2001.	Platform Presentation: Decreasing the amplitude of the electrical stimulus during the burst-superimposition maximum voluntary quadriceps isometric force test.	Combined Sections Meeting of the APTA. San Antonio, TX.
February, 2002	Platform Presentation: Coordination and agility training in individuals with knee osteoarthritis: a case report.	Combined Sections Meeting of the APTA, Boston, MA
October, 2002	Platform Presentation: Quadriceps Activation Failure as a Moderator of the Relationship Between Quadriceps Strength and Physical Function in Individuals with Knee Osteoarthritis.	37 <sup>th</sup> Annual Scientific Meeting of the Association of Rheumatology Health Professionals. New Orleans, LA
October, 2002	Poster Presentation: Alterations in lower extremity movement and muscle activation patterns in individuals with knee osteoarthritis.	37 <sup>th</sup> Annual Scientific Meeting of the Association of Rheumatology Health Professionals. New Orleans, LA
October, 2002	Platform Presentation: Reliability and validity of the get up and go test in patients with knee osteoarthritis.	37 <sup>th</sup> Annual Scientific Meeting of the Association of Rheumatology Health Professionals. New Orleans, LA



February, 2003	The effectiveness of neuromuscular electrical stimulation (NMES) for quadriceps strengthening in post-operative ACL rehabilitation: standard vs criterion-based application.	Combined Sections Meeting of the APTA, Tampa, FL
February, 2004	The prevalence of self-reported joint instability in knee osteoarthritis and its relationship to physical function.	Combined Sections Meeting of the APTA, Nashville, TN

### **Manuscript Reviewer**

1993 – present	<i>Physical Therapy.</i>
1998	<i>Journal of Motor Behavior.</i>
1999 to present	<i>Journal of Orthopaedic and Sports Physical Therapy.</i>
2002 to present	<i>Physiotherapy International.</i>
2003 to present	<i>Arthritis Care and Research.</i>
2004 to present	<i>Medicine and Science in Sports and Exercise</i>
2005 to present	<i>Arthritis and Rheumatism</i>
2006 to present	<i>Osteoarthritis and Cartilage</i>
2008 to present	<i>Archives of Internal Medicine</i>

### **Grant Reviewer**

1994 to 1995	Pennsylvania Physical Therapy Association Research Award.
2000 to Present	The Aircast Foundation
2003	Orthopedic Special Section of the American Physical Therapy Association, Research Grant Award.
2004 to 2006	American College of Rheumatology Research and Education Foundation
2004 to Present	National Institutes of Health, Medical Rehabilitation Science Study Section

2005 to 2009	Foundation for Physical Therapy Research, Inc, Scientific Review Committee
2007, 2012	Arthritis Research Campaign-United Kingdom
2007 to 2009	Dutch Arthritis Association
2008	National Institute on Aging, Special Emphasis Panel
2009	National Institutes of Health: Musculoskeletal Tissue Engineering Study Group
2010	US Army Medical Research and Material Command: Peer-Reviewed Medical Research Program (PRMRP): Post-traumatic OA study section.
2011	Australian Physiotherapy Research Foundation.
2011	NIH MOSS Special Emphasis Panel
2011 to 2013	Arthritis Health Professions Association, Canada
2014	US Army Medical Research and Material Command: Peer-Reviewed Medical Research Program (PRMRP)
2014	NIH Director's Early Independence Awards
2015	NIH Special Emphasis Panel

### **Editorial Board Membership**

2000	Editorial Review Group, <i>Guide to Physical Therapy Practice</i> , Publication of the American Physical Therapy Association.
2003 to 2004	Editorial Review Board: <i>Journal of Orthopaedic and Sports Medicine</i> .
2004 to 2006 2016 to present	Editorial Board Member: <i>Physical Therapy</i>
2006 to 2010	Senior Editorial Board Member: <i>Physical Therapy</i>
2004 to 2005	Associate Editor: <i>Arthritis Care and Research</i>
2010 to 2015	Editorial Board Member: <i>Arthritis Care and Research</i>
2012 to Present	Editorial Board Member: <i>Physiotherapy Practice and Research</i> , The

**SERVICE**

**University and School Committees**

August 2000 to 2003.	Member of University of Pittsburgh Institutional Review Board.
July 2000 to June 2001.	Member of University of Pittsburgh, School of Health and Rehabilitation Sciences, Nomination Committee.
January 2002 to 2005.	Member of University of Pittsburgh, School of Health and Rehabilitation Sciences, Academic Integrity Board.
October 1998 to Present 2003	Member of Department of Physical Therapy Admissions Committee. Member of the Department of Physical Therapy Entry-Level Competency Examination Committee.
2004	University of Pittsburgh Internal Data Safety and Monitoring Board Member. Functional Impact of PENS for 65+ Chronic Low Back Pain. PI: Deborah Weiner, MD
2004	University of Pittsburgh Internal Data Safety and Monitoring Board Member. Osteopuncture for OA-Associated Knee Pain and Disability. PI: Deborah Weiner, MD
2005 to 2007	Chair, Scientific Review Committee, University of Pittsburgh, School of Health and Rehabilitation Sciences.
2005	Member: Academic Promotion and Tenure Committee, University of Pittsburgh, School of Health and Rehabilitation Sciences.
2010	Member: School of Health Sciences Post-Doctoral Progress Assessment Committee
2011 to 2014	Multidisciplinary Advisory Committee, Multidisciplinary Clinical Research Scholars Program, Institute for Clinical Research Education, University of Pittsburgh.
2012	Doctoral Comprehensive Examination Committee University of Pittsburgh, School of Health and Rehabilitation Sciences.
2013	Chair: Task Force for Dissertation Credit Grading University of Pittsburgh, School of Health and Rehabilitation Sciences.

2015 to present PCOR K12 Advisory Committee, Institute for Clinical Research Education, University of Pittsburgh

### **Professional/Community Service**

March, 1995 Invited Member of American Physical Therapy Association Task Force to develop a "How to" manual for clinicians on writing case reports.

June 1995 Member of Task force to develop a research grant program sponsored by the Orthopedic Special Section of the American Physical Therapy Association.

1995 to 1999. Member of the Research Committee, Orthopedic Special Section of the American Physical Therapy Association.

1999 to 2002. Chair, Research Committee, Pennsylvania Physical Therapy Association.

2003 to 2006 Chair, Research Committee, Orthopedic Special Section of the American Physical Therapy Association.

1999 to 2002 Member of Annual Conference Educational Programming Subcommittee, American Physical Therapy Association.

1999 Examiner: Sports Physical Therapy Competency Certification Program. Centers for Rehabilitation Services, McKeesport, PA.

2002, 2003 Abstract Reviewer for American College of Rheumatology/Association of Rheumatological Health Professionals, Annual Conference.

2003 to 2004 Expert Panel Member, *FYSIO*, An International Newsletter for Physiotherapists.

2003 to 2004 Member of Association of Rheumatological Health Professions Research Committee.

2004 Discussion Group Leader, Ethics in Research: University of Pittsburgh Survival Skills and Ethics Workshop Program.

2004-2008 Team Coordinator and Captain: Arthritis Foundation, Western PA Chapter, Annual Fund Raising Walk.

2006 to 2008 Chairperson: National Institute of Arthritis and Musculoskeletal and Skin Diseases, Data Safety and Monitoring Board. Flavocoxib: A medical

food therapy for osteoarthritis. PI: Sarah Luise Morgan, MD, RD, University of Alabama at Birmingham.

- 2008-2009 Invited Faculty, United States Bone and Joint Decade Young Investigator's Grant Writing Workshop.
- 2008 Invited Member, Expert Panel: Revision of American College of Rheumatology Treatment Guidelines for Hip, Knee, and Hand Osteoarthritis.
- 2008 Chairperson: Orthopaedic Section Special Task Force for APTA Research Agenda.
- 2008 Invited Member: American Physical Therapy Association: Research Advisory Committee.
- 2010 to 2012 Catherine Worthingham Fellows Awards Subcommittee American Physical Therapy Association
- 2011 Invited Member, Technical Expert Panel, Minnesota Evidence-based Practice Center's Project on Physical Therapy for Knee Pain Secondary to Osteoarthritis. Sponsored by Agency for Health Research and Quality.
- 2011 to 2015 Advisory Board Member: "Translation of Quantitative Imaging in Osteoarthritis" CORT, NIAMS
- 2011 to present Advisory Panel Member: United States Bone and Joint Decade "Experts in Arthritis," A Public Education Seminar for People with Arthritis.
- 2013 to 2015 Chair, Subcommittee on Rehabilitation. Osteoarthritis Research Society International (OARSI) Revision of Clinical Trial Guidelines Task Force.
- 2013 Invited Stakeholder: Patient Centered Outcomes Research Institute (PCORI). Effectiveness of Alternative Strategies for Stabilizing Symptoms in People with Osteoarthritis
- 2016 to present Member, Journal of Orthopaedic and Sports Physical Therapy Board of Directors

### **Consultative and Advisory Positions**

- 1987 Physical Therapy Advisor to Sportsmedicine Program: Milwaukee Medical Clinic
- 1989 Physical Therapy Consultant to Spine Clinic: Medical College of

	Virginia, Richmond VA
1989 to 1990	Prosthetic/Orthotic Clinic Coordinator: Medical College of Virginia, Richmond VA
1990	Physical Therapy Consultant to Work Hardening Program: Medical College of Virginia, Richmond VA
1992	Physical Therapy Consultant: Northwest Physical Therapy, Wynnmore, PA
1996 to 1998	Physical Therapy Consultant: University of Delaware, Sports Medicine Clinic
1999 to 2008	Physical Therapy Consultant: University of Pittsburgh, Center for Sports Medicine, Pittsburgh PA.
1999 to 2008.	Sports Physical Therapy Resident Program Advisory Committee and Clinical Mentor, University of Pittsburgh, Center for Sports Medicine.
2004 to 2006	Center for Disease Control, Pittsburgh Laboratory. Knee injury prevention in Coal Miners.
2007	Mid-term tenure and promotion reviewer for Virginia Commonwealth University. (Lori Michener, PT, PhD)
2007	Mid-term tenure and promotion reviewer for University of Florida. (Steven George, PT, PhD)
2008 to 2011	Orthopedic Physical Therapy Resident Program Research Advisor and Clinical Mentor, Centers for Rehabilitation Services, an affiliate of University of Pittsburgh Medical Center.
2010 to 2015	Volunteer Physical Therapy Faculty Consultant to the Pro-Bono Physical Therapy Clinic at the University of Pittsburgh Student Health Services

### **Professional Presentations**

May, 1991.	Cadaver Laboratory Presentation on "Knee Ligament Anatomy." Pennsylvania Physical Therapy Association, Spring Conference.
May, 1991.	"Conservative Management of Patellofemoral Dysfunction." Pennsylvania Physical Therapy Association, Spring Conference.

- February, 1992. Invited speaker, Manual Therapy Round Table, Combined Sections Meeting of the APTA, San Francisco, CA. "Efficacy of Manual Therapy",
- March, 1992. Invited speaker, South East District PPTA Chapter Meeting, "Patellofemoral Dysfunction: Considerations for Conservative Management."
- January, 1993. Invited Speaker: Faculty Development Day, Hahnemann University, Current Transformations in U.S. Healthcare. Co-coordinator of a workshop titled "Generalists and Specialists in Healthcare." Sponsored by the School of Health Sciences and Humanities.
- June, 1996. Invited Speaker, Clinical Decision Making Forum, American Physical Therapy Association Annual Conference, Minneapolis, MN, "Open and Closed Kinetic Chain Exercises: Issues in Knee Rehabilitation."
- June 1997. Invited Speaker, Clinical Decision Making Forum, American Physical Therapy Association Annual Conference, San Diego, CA, "Open and Closed Kinetic Chain Exercises: Issues in Knee Rehabilitation."
- June, 1999. Invited Speaker, Symposim: Challenging the Myths in Physical Therapy, American Physical Therapy Association Annual Conference, Washington, DC. "Open and Closed Kinetic Chain Exercises: Issues in Knee Rehabilitation."
- July, 1999. Invited Speaker: University of Delaware, Department of Physical Therapy, Graduation Ceremony. Newark, DE.
- November, 1999. Invited Speaker: Pennsylvania Physical Therapy Association/Southwest District Meeting, "Current Concepts in Post-Operative ACL Rehabilitation".
- June, 2000. Invited Panelist: Clinical Case Conference. American Physical Therapy Association Annual Conference. Indianapolis, IN.
- April, 2001. Invited Speaker: Functional Retraining Workshop for Athletic Trainers. Sponsored by the UPMC Center for Sports Medicine Department of Athletic Training.
- October, 2001. Invited Speaker: Pennsylvania Physical Therapy Association Annual Conference: Continuing Education Course: "Current Issues in Knee Rehabilitation". Two Day Course. Seven Springs Resort, Champion PA.

- April, 2002. Neuromuscular Electrical Stimulation for Quadriceps Strengthening. Presented to the Physical Therapy Department at the UPMC Center for Sports Medicine.
- January, 2003 Knee Instability in Knee OA: Considerations for Rehabilitation. Presented to the Physical Therapy Department at UPMC Rehabilitation Hospital.
- May, 2003 Physical Activity and Exercise for Knee Osteoarthritis. Community Education Program Sponsored by the UPMC Arthritis Institute.
- September 2003 Invited Speaker, One Day Course: "Evidence-Based Knee Rehabilitation." US Army Medical Corps. Fort Sam Houston, San Antonio, TX.
- October 2003 Invited Speaker, First International Congress on Rehabilitation of the Knee: The Future of Knee Rehabilitation. Campinas, Brazil
- April, 2004 Visiting Professor, University of Missouri, Department of Physical Therapy. "Measurement Issues in Knee Osteoarthritis," and "Writing Case Reports: Getting Started and General Considerations."
- April, 2004 Invited Speaker, Missouri Physical Therapy Association, Spring Conference. Physical Therapy Management of Knee Disorders. 8 hour continuing education course.
- May, 2004 Physical Activity and Exercise for Knee Osteoarthritis. Community Education Program Sponsored by the UPMC Arthritis Institute.
- October 2004 Invited Speaker, "Agility Training for the Arthritic Knee." American College of Rheumatology 2005 Annual Scientific Meeting, San Antonio, TX.
- February 2005 Invited Speaker, "Open vs Closed Chain Exercise in ACL Rehabilitation." Combined Sections Meeting of the American Physical Therapy Association, New Orleans, LA
- February 2005 Moderator and Instructor, "Orthopaedic Physical Therapy Research Information Exchange Center." Combined Sections Meeting of the American Physical Therapy Association, New Orleans, LA
- February 2006 Moderator and Instructor, "Orthopaedic Physical Therapy Research Information Exchange Center." Combined Sections Meeting of the American Physical Therapy Association, San Diego, CA.



March 2006	Invited Speaker, Biomedical Engineering in Exercise and Sports Conference. “Neuromuscular electrical stimulation for muscle strength training.” Torino, Italy.
June 2006	Invited Speaker, American Physical Therapy Association Scientific Exposition. “Foundation for Physical Therapy Grant Roundtable Session.” Orlando, FL.
February 2007	Invited Speaker: ‘Managing the Patient with Lower Extremity Osteoarthritis From Lab to Clinic to Community.’ Combined Sections Meeting of the American Physical Therapy Association, Boston, MA
February 2007	Invited Speaker: Knee Education Group: The contribution of abnormal hip mechanics to knee injury: A top-down perspective: “Associations Between Hip Mechanics and Knee Osteoarthritis.” Combined Sections Meeting of the American Physical Therapy Association, Boston, MA
February 2007	Moderator and Instructor, “ Physical Therapy Research Information Exchange Center.” Combined Sections Meeting of the American Physical Therapy Association, Boston, MA
February 2007	Invited Panelist: “Mock NIH Review: a glimpse into the NIH grant review process.” Combined Sections Meeting of the American Physical Therapy Association, Boston, MA
December 2007	Invited Speaker: Therapeutic Exercise and Knee Osteoarthritis: Can We Improve Our Effects? Southern Physiotherapist Symposium, Queenstown, New Zealand.
February 2008	Moderator and Instructor, “ Physical Therapy Research Information Exchange Center.” Combined Sections Meeting of the American Physical Therapy Association, Nashville, TN
April 2008	Invited Speaker: “Current Issues in Knee Rehabilitation.” Pennsylvania Physical Therapy Association sponsored course, Harrisburg PA.
May 2008, April 2009	Invited Faculty Member, United States Bone and Joint Decade, Young Investigator Workshop. Chicago, Il. “Writing the Background and Significance Section of a Grant.”
June 2008	Invited Speaker, “Reflections on Arthritis in <i>Physical Therapy</i> .” Annual Conference of the American Physical Therapy Association, San Antonio, TX.
October 2009	Invited Speaker, American College of Rheumatology Research

- Conference. “Addressing Subsets that Affect the Outcomes of Physical Therapy for Knee Osteoarthritis: An Evidence-Based Approach.” Philadelphia, PA
- November 2009      Invited Speaker. Intermountain Healthcare, “Current Issues in Knee Rehabilitation.” Salt Lake City, UT.
- February 2010      Invited Speaker, Combined Sections Meeting of the APTA,; “Clinical Diagnosis for ACL Injury.” San Diego, CA
- November 2010      Invited Speaker: American College of Rheumatology Non-pharmacological Treatment Guidelines Workshop. American College of Rheumatology Annual Conference. Atlanta GA.
- February 2011      Invited Speaker: Comparative Effectiveness Research Designs. Physical Therapy Journal Editorial Board Meeting. Combined Sections Meeting of the American Physical Therapy Association. New Orleans, LA.
- June 2011            Invited Speaker: Physical Therapy Journal Symposium on Disability Research. Annual Conference of the American Physical Therapy Association. National Harbor, MD.
- February 2012      Invited Speaker: Invited Speaker: Physical Therapy Journal Symposium on Disability Research. Combined Sections Meeting of the American Physical Therapy Chicago, IL.
- March 2012          Invited Speaker: Southwest District, Pennsylvania Physical Therapy Association, Mini-Combined Sections Meeting. “Evidence-based Considerations in Rehabilitation for Knee Osteoarthritis.”
- March 2012          Invited Speaker: Northwest Central District, Pennsylvania Physical Therapy Association. “Clinically Applied Biomechanics for the Tibio-femoral Joint: Implications for Evaluation and Treatment.”
- November 2012      Invited Speaker: Association for Rheumatological Health Professions Annual Meeting, Washington, D.C. Treating the Patient with Osteoarthritis: Interventions, Innovations and Clinical Insights Clinical Focus Course - Breakout Session I; "Neuromuscular training and joint mobilizations: Do we need both to optimize lower limb function?"
- May 2013            Invited Speaker: “Evaluation and Treatment Considerations for Lower Extremity Osteoarthritis.” 1<sup>st</sup> Annual Meeting of the Orthopaedic Section, American Physical Therapy Association, Orlando FL.
- February 2014      Invited Speaker: Eugene Michels Forum. Combined Sections Meeting of

the APTA. Las Vegas NV 2014. “In Defense of Impairment-Based Rehabilitation Approaches in Orthopaedic Rehabilitation.”

- April 2014                      Invited Speaker, Arthritis State of the Science Meeting. Hosted by Boston University. Pentagon City, VA. “Knee Pain/OA: Physical Therapy Approaches.
- May 2015                        Invited Speaker: “Osteoarthritis: The Disease, The Challenges, and The Opportunities for Physical Therapy.” 3rd<sup>l</sup> Annual Meeting of the Orthopaedic Section, American Physical Therapy Association, Pheonix, AZ.
- October 2015                    Invited Speaker: “Exercise, Manual Therapy, and Use of Booster Sessions in Physical Therapy for Knee OA: Experience From A Multi-Center RCT.” Robert L. Lamb Distinguished Lectureship. Virginia Commonwealth University, Department of Physical Therapy, Richmond VA.
- November 2015                 Invited Speaker: “Fall Prevention Interventions: The Physical Therapy Perspective.” American College of Rheumatology/Associated Rheumatological Health Professions Annual Conference. San Francisco, CA.
- February 2016                 Panelist: “Get in the Game With PCORI: A Successful Research Group’s Experience.” Combined Sections Meeting of the American Physical Therapy Association. Anaheim, CA.
- March 2016                      Invited Speaker: “Exercise, Manual Therapy, and Use of Booster Sessions in Physical Therapy for Knee OA: Experience From A Multi-Center RCT.” Panther Rounds. University of Pittsburgh School of Medicine, Department of Rehabilitation Medicine.