

Curriculum Vitae

September 2017

Personal

Name: Paul F. Beattie, Ph.D., PT, O.C.S., FAPTA

Office Address: Doctoral Program in Physical Therapy
Department of Exercise Science
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University of South Carolina
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Education

University of New Mexico, Albuquerque, New Mexico, 1986-1992,
Ph.D. in Exercise Science 1992, Minor in Kinesiology and Statistics

Dissertation: "Displacement of the Lumbar Intervertebral Disc and Alterations in the Intervertebral Foramen During Different Supine Positions: an in-vivo study using Magnetic Resonance Imaging"

Medical College of Virginia, Richmond, Virginia, 1982-1985, MS in Orthopedic Physical Therapy, 1985

Quinnipiac College, Hamden, Connecticut, 1971-1975 BS in Physical Therapy, 1975

Military Service

United States Army, August 1969 to March 1971. Combat tour in Republic of Vietnam, 101st Airborne Division, March 1970-March 1971. Honorable Discharge 1975.

License Information/Registration Number

Board Certified Clinical Specialist in Orthopedic Physical Therapy, Number 99, September 1989, Re-certified 1999, 2009

Currently licensed to practice in South Carolina #4320

Previous Physical Therapy license in New York 1975 to 1976, 1992-2001, Florida 1976 to 1982, Virginia 1982 to 1985, New Mexico 1985-1993.

Instructor, American Red Cross: Adult, child and infant CPR, AED and First Aid;
Wilderness First Aid

Certified Wilderness First Responder

Employment and Positions Held

Clinical Practice

Clinical Research Physical Therapist, Palmetto Health, University of South Carolina,
Mobility and Research Clinic 2010 to present

Consulting Physical Therapist, Rochester Red Wings professional baseball club 1998-01

Physical Therapist, Clinical Assistant Professor, Department of Orthopedics, Division of
Sports Medicine, University of Rochester, Rochester, NY 1996-01

Consulting Physical Therapist, Center for Occupational Rehabilitation, University of
Rochester, Rochester, NY 1993-1996

Physical Therapist, Department of Rehabilitation Services and Athletic Department,
University Hospital, University of New Mexico, Albuquerque, New Mexico 1990-1993

Physical Therapist, Department of Physical Therapy, Medical College of Virginia Hospital,
Richmond, Virginia, 1982-1985

Chief Physical Therapist, Physical Therapy and Rehabilitation Center, Gainesville, Florida,
1980-1982

Physical Therapist, Upjohn Home Health Agency, Gainesville, Florida, 1978-1980

Physical Therapist, Department of Physical Therapy, Shands Teaching Hospital,
University of Florida, Gainesville, Florida, 1976-1978

Physical Therapist, Department of Rehabilitation Medicine, Manhattan Veteran's
Hospital, New York, New York, 1975-1976

Academic

Clinical Professor, Doctoral Program in Physical Therapy, Department of Exercise Science, School of Public Health, University of South Carolina, Columbia, SC 2012 to present

Clinical Associate Professor, Doctoral Program in Physical Therapy, Department of Exercise Science, School of Public Health, University of South Carolina, Columbia, SC 2001 to 2012

Adjunct Associate Professor of Developmental Biology and Anatomy, School of Medicine, University of South Carolina, Columbia, SC 2001 to present

Adjunct Professor, Northern Arizona University, Program in Physical Therapy, 2001 to present

Assistant Professor, Ithaca College, Department of Physical Therapy, Rochester Campus, Rochester, NY 1993-1998

Visiting Scholar, School of Physiotherapy, University of Sydney, Sydney, Australia 1996

Adjunct Faculty Member, University of Illinois at Chicago, Department of Physical Therapy, Chicago, Illinois 1990-1995

Lecturer III, University of New Mexico, Division of Physical Therapy, Department of Orthopedics, College of Medicine, Albuquerque, New Mexico, 1985-1990

Consulting

Member, International Scientific Advisory Board, *Expert Clinical Benchmarks*, Medrisk Corporation, King of Prussia, Pa. 2000-present

Coordinator, Human Gross Anatomy Component of Combat Trauma and Ministering, United States Army Chaplain Center and School, Fort Jackson, SC. 2008-present (Pro Bono)

Site coordinator Regens Biomedical Corporation, 1999-2001

Publications

Peer-Reviewed: In press or review

Driehuis F., van Dulmen SA; de Bie R, **Beattie PF**, Nelson R, Nijhuis-van der Sanden MWG, van der Wees PJ. Patient perceived quality of physical therapists services: measurement properties study of the Healthcare Experience and Outcome measure in Physical Therapy (HEOPT). *BMC Health Services Research*. 2017 (in review)

Silfies S, **Beattie PF**, Vendemia J, Jordon M, Vendemia S. Functional MRI protocol to assess sensorimotor control of the lumbopelvic-hip region. *BMC Imaging* 2017 (In review)

Peer-Reviewed: Published

Mitchell UH, **Beattie PF**, Bowden J, Larson R. Age-Related Differences In The Response of The L5-S1 Intervertebral Disc To Spinal Traction. *Musculoskeletal Science and Practice*. 2017;31:1-8.

Silfies SP, Vendemia JMC, **Beattie PF**, Stewart JC, Jordon M. changes in brain structure and activation may augment abnormal movement patterns: An emerging challenge in musculoskeletal rehabilitation. *Pain Medicine* 2017 pnx190, <http://doi.org/10.1093/pm/pnx190>.

Arnold A, Thigpen C, **Beattie PF**, Shanley E, Fritz S. Overuse Injuries in Youth Athletes: Risk Factors, Prevention and Treatment Strategies. *Sports Health* 2017;9:139-147

Bailey LB, Thigpen CA, Hawkins RJ, **Beattie PF**, Shanley E. Effectiveness of Manual Therapy and Stretching for Baseball Players With Shoulder Range of Motion Deficits. *Sports Health*. 2017 May/Jun;9(3):230-237

Jordon M, **Beattie PF**, D'Urso S, Scriven S. Pain pressure threshold is not affected by spinal manipulation performed on asymptomatic adults. *Journal of Manipulative and Physiologic Therapeutics* 2016
<http://www.tandfonline.com/doi/full/10.1080/10669817.2016.1230352>

Beattie PF, Silfies S, Jordon M. The Evolving Role of Physical Therapists in the Long-Term Management of Chronic Low Back Pain: Longitudinal Care Using Assisted Self-Management Strategies. *Brazilian Journal of Physical Therapy* 2016
<http://dx.doi.org/10.1590/bjpt-rbf.2014.0180>

Drenowatz C, Suia X, Fritz S, Lavie CJ, **Beattie PF**, Church TS, Blair SN. The association between resistance exercise and cardiovascular disease risk in women *Journal of Science and Medicine in Sport* 2015;18:632-636.

Bailey LB, Shanley E, Hawkins R, **Beattie PF**, Fritz S, Kwartowitz D, Thigpen CA. Mechanisms of Shoulder Range of Motion Deficits in Asymptomatic Baseball Players. *Am J Sports Med*. 2015 Nov;43(11):2783-93.

Bailey L, **Beattie PF**, Shanley E, Seitz A, Thigpen G. Current concepts in rehabilitative ultrasound imaging of the shoulder: A clinical commentary. *Journal of Orthopedic and Sports Physical Therapy* 2015;45:394-405.

Oliveira N.F., Costa L.O., Nelson R.M, Maher C.G., **Beattie P.F.**, de Bie R.A., Oliveira W, Azevedo D.C., Menezes Costa L.C. Cross-cultural adaptation and evaluation of the measurement properties of the Brazilian-Portuguese version of the MedRisk instrument for measuring Patient Satisfaction with physiotherapy care. *Journal of Orthopedic and Sports Physical Therapy* 2014;44:879-899.

Beattie PF, Butts R, Donley JW, Liuzzo DM. The Immediate Change in Low Back Pain Intensity Following Spinal Manipulative Therapy is Related to Differences in Diffusion of Water in the Intervertebral Discs of the Upper Lumbar Spine and L5-S1. *Journal of Orthopedic and Sports Physical Therapy* 2014;44:16-26.

Sandler R, Church T, Blair S, Fritz S, Mei, S, **Beattie PF**. Are flexibility and muscle-strengthening activities associated with a higher risk of developing low back pain? *Journal of Science and Medicine in Sport* 2014;17:361-5.

Bailey LB, Thigpen CA, Hawkins R, **Beattie PF**, Fritz S, Kwartowitz D, Shanley E. The Acute Effects of Manual Therapy in Baseball Players with Posterior Shoulder Tightness, *American J of Sports Medicine* 2014 (in revision)

Beattie PF, Nelson RM, Basile K. Differences Among Health Care Settings in Utilization and Type of Physical Rehabilitation Administered to Patients Receiving Workers' Compensation for Musculoskeletal Disorders. *Journal of Occupational Rehabilitation* 2013;23:347-360.

Hush JM, Lee H, Yung V, Adams R, Mackey M, Wand BM, Nelson RM, **Beattie PF** Intercultural comparison of patient satisfaction with physiotherapy care in Australia and Korea: an exploratory factor analysis. *Journal of Manual and Manipulative Therapy* 2013;21:103-112

Hush JM, Yung V, Mackey M, Adams R, Wand BW, Nelson RM, **Beattie PF**. Patient satisfaction with physical therapy care in Australia: an international comparison. *Journal of Manual and Manipulative Therapy* 2012;20:201-208.

Beattie PF. Diffusion-weighted Imaging in the evaluation and treatment of painful spinal disorders: a developing technology that can impact clinical decision making. *Diagnostic Imaging Europe* 2011;27:9-12

Beattie PF. Diffusion-weighted magnetic resonance imaging of the musculoskeletal system: an emerging technology with potential to impact clinical decision making. *Journal of Orthopedic and Sports Physical Therapy* 2011;11:887-895.

Beattie PF, Nelson RM, Heintzelman M The Relationship Between Patient Satisfaction with Physical Therapy Care and Global Rating of Change Reported by Patients Receiving Worker's Compensation. *Physiotherapy Theory and Research* 2011;27:310-318.

Beattie PF, Nelson RM, Murphy DR. Development and Preliminary Validation of the MedRisk Instrument to Measure Patient Satisfaction with Chiropractic Care. *Journal of Manipulative and Physiologic Therapeutics* 2011;34:23-29.

Elliott JM, Ashley R. Pedler, **Beattie PF,** McMahon K. Diffusion-Weighted Magnetic Resonance Imaging for the Healthy Cervical Multifidus: A Potential Method for Studying Neck Muscle Physiology Following Spinal Trauma *Journal of Orthopedic and Sports Physical Therapy* 2010;40(11):722-728.

Beattie PF, Arnot CF, Donley JW, Noda H, Bailey L. The Immediate Reduction in Low Back Pain Intensity Following Lumbar Joint Mobilization and Prone Press-Ups is Associated with Increased Diffusion of Water in the L5-S1 Intervertebral Disc. *Journal of Orthopedics and Sports Physical Therapy* 2010;40:256-264.

Beattie PF, Donley J, Arnot C, Miller R. The Immediate Change in the Diffusion of Water in Lumbar Intervertebral Discs Following a Single Session of Lumbar Joint Mobilization Compared to a Single Session of Prone Lying. *Journal of Orthopedics and Sports Physical Therapy* 2009;39:4-11

Beattie PF. Current understanding of lumbar intervertebral disc degeneration: A review with emphasis upon etiology, pathophysiology, and lumbar magnetic resonance imaging findings. *Journal of Orthopedic and Sports Physical Therapy* 2008;38:329-339.

Beattie PF, Morgan P, Peters D. Diffusion-Weighted Magnetic Resonance Imaging of Normal and Degenerative Lumbar Intervertebral Discs: A Promising New Method to Quantify the Physiologic Effect of Physical Therapy Intervention. *Physical Therapy Journal of Orthopedic and Sports Physical Therapy* 2008;38:42-49.

Beattie PF, Nelson RM, Michener L. Outcomes Following a Prone Lumbar Traction Protocol for Patients With Activity-Limiting Low Back Pain: A Prospective Study *Archives of Physical Medicine and Rehabilitation* 2008;89:269-274.

Beattie PF, Nelson RM, Lis A. Spanish-Language Version of the Medrisk Instrument for Measuring Patient Satisfaction with Physical Therapy Care (MRPS): Preliminary Validation. *Physical Therapy* 2007;87:793-800.

Beattie PF, Nelson RM. Evaluating Research Studies That Address Prognosis for Patients Receiving Physical Therapy Care. *Physical Therapy* 2007;87:1527-1535.

Beattie PF, Nelson RM. Clinical Prediction Rules: What are they and what do they tell us? *Australian J of Physiotherapy* 2006;52:157-163.

Beattie PF, Dowda M, Turner C., Michener L, Nelson RM. Longitudinal Continuity of Care is Associated with High Patient Satisfaction With Physical Therapy. *Physical Therapy* 2005;85:1046-1052.

Beattie PF, Turner C, Dowda M, Michener L, Nelson RM. The MedRisk Instrument for Measuring Patient Satisfaction with Physical Therapy Care (MRPS): A psychometric analysis. *Journal of Orthopedic and Sports Physical Therapy* 2005;35:24-32

Al-Obaidi S, **Beattie PF**. The relationship of anticipated pain and fear avoidance beliefs to outcome in patients with chronic low back pain who are not receiving worker's compensation. *Spine* 2005;1051-7.

Beattie PF, Dowda M, Feuerstein M. Differentiating Sensory and Affective-Sensory Pain Descriptions in Patients Undergoing Magnetic Resonance Imaging for Persistent Low Back Pain. *Pain* 2004;110:189-196

Beattie PF, Pinto MB, Nelson R, Nelson MK. Patient satisfaction with outpatient physical therapy care: Instrument validation. *Physical Therapy* 2002;82:557-565

Hollenberg G, **Beattie PF**, Meyers SP. Stress reactions of the lumbar pars interarticularis: The development of a new MRI classification system. *Spine* 2002;27:181-186

Beattie PF. Measurement of Health Outcomes in the Clinical Setting: Applications to Physiotherapy. *Physiotherapy Theory and Practice* 2001;17:173-185

Beattie PF, Meyers SP. The relationship of lumbar MRI findings to symptoms. *Journal of Controversial Medical Claims* 2000;7:1-10.

Meyers SP, Wildenhain S, Chang JK, Bourekas EC, **Beattie PF**, Kornones DN, Davis D, Pollack IF, Zimmerman RA. Postoperative Evaluation for Disseminated Medulloblastoma Involving the Spine: Gadolinium-Enhanced MRI Findings, CSF Cytology, Timing of Disease Occurrence and Patient Outcomes. *American Journal of*

Neuroradiology 2000;21:1757-1765

Beattie PF., Meyers S., Stratford P, Millard R, Hollenbeck G. Associations Between Patient Report of Symptoms and Anatomic Impairment Visible on Lumbar Magnetic Resonance. *Spine* 2000;25:819-828

Beattie PF., Meyers S. Magnetic resonance imaging in low back pain: general principles and clinical issues. *Physical Therapy* 1998;78:738-753

Beattie PF., Maher C. The Role of Functional Status Questionnaires for Low Back Pain. *Australian Journal of Physiotherapy* 1997;43:29-42

Millard R, **Beattie PF.** The Use of Questionnaires to Evaluate Chronic Pain-Related Disability. *Critical Reviews in Physical and Rehabilitation Medicine* 1997;9:35-52

Beattie PF. The Relationship Between Symptoms and Abnormal Magnetic Resonance Images of Lumbar Intervertebral Discs. *Physical Therapy* 1996;76:601-608

Feuerstein M, **Beattie PF.** Clinical Evaluation of Biobehavioral Factors Affecting Pain and Disability in Low Back Pain. *Physical Therapy* 1995;75:267-280 (reprinted in *Rehabilitacja* 1997;1:1, Kwartalnik (Polish))

Beattie PF, Sibbitt W, Rothstein JM, Brooks W, Robergs R, MacLean T, Hart B: Effect of lordosis on the position of the nucleus pulposus in supine subjects. *Spine* 1994;19:2096-2102

Fitzgerald K, McClure P, **Beattie PF**, Riddle D: Issues in Determining the Efficacy of Manual Therapy. *Physical Therapy* 1994; 74:227-233

Beattie PF: The Use of an Eclectic Approach for the Treatment of Low Back Pain: A Case Study. *Physical Therapy* 1992;72:923-928.

Beattie PF, Isaacson K, Riddle DL, Rothstein JM: Validity of Derived Measurements of Leg-Length Differences Obtained by the Use of a Tape Measure. *Physical Therapy* 1990; 70:150-157.

Beattie PF, Kopriva L: The Use of Student-Teams for Teaching Human Gross Anatomy in a Physical Therapy Curricula. *Journal of Physical Therapy Education* 1988;2:24-26.

Beattie PF, Rothstein JM, Lamb RL: Reliability of the Attraction Method of Measuring Lumbar Spine Backward Bending. *Physical Therapy* 1987; 67:364-369.

Non-Peer Reviewed

Beattie PF, Silfies S. Improving Long-Term Outcomes for Chronic Low Back Pain: Time for a New Paradigm? Editorial *Journal of Orthopedic and Sports Physical Therapy* 2015;45:236-9

Beattie PF. Describing the Patient or Other Entity: Prognosis. In Chapter 7, *How to Write Case Reports*. Volume 2. APTA Publications. 2009. Pg 127-129.

Nelson RM, Heintzelman M, **Beattie PF**. Why Satisfaction Matters. *Impact: The Journal of the APTA Private Practice Section*. June 2009; 28-29.

Beattie PF. In the Spotlight. *Orthopedic Physical Therapy Practice* 2009;21:40-41

Beattie PF, Nelson RM. Preserving the quality of the patient-therapist relationship: An important consideration for value-centered physical therapy care. Editorial *Journal of Orthopedic and Sports Physical Therapy* 2008;38:34-35.

Beattie PF. This is Why. Editorial *Physical Therapy Magazine*. April 2007 page 108

Beattie PF. Evidence-Based Practice in Out-Patient Physical Therapy: Using Research Findings to Assist Clinical Decision Making. *Orthopedic Physical Therapy Practice* 2004;16:27-29

Beattie PF. Commentary on: Lundon K, Bolton K. Structure and function of the lumbar intervertebral disc in health, age and pathologic conditions. *Journal of Orthopedic and Sports Physical Therapy* June 2001

Beattie PF. Issues in the Diagnostic Usefulness of Lumbar MRI. Newsletter, Canadian Physiotherapy Association Summer 1998, reprinted in *Orthopedic Physical Therapy Practice*, Winter 1999

Beattie PF. Barriers to Clinical Research. *Orthopedic Physical Therapy Practice* 1994;6:11-12.

Beattie PF. Commentary on: Jette AM, Smith K, Haley S, et. al. Physical Therapy Episodes-of-Care for Patients with Low Back Pain. *Physical Therapy* 1994;74:101-115.

Beattie PF. Commentary on: Binkley J, Finch E, Hall J, et al. Diagnostic Classification of Patients with Low Back Pain: Report on a Survey of Physical Therapy Experts. *Physical Therapy* 1993;73:151-152.

Beattie PF. Observations on Providing Physical Therapy to Homeless People. *P.T. Magazine* 1993; 1:50-51.

Beattie PF, Rothstein JM, Kopriva L: The Clinical Reliability of Measuring Leg Lengths.

Physical Therapy, 1988; 68:588, (abstract)

Home Study Courses, Book Chapters

Beattie PF. Physical Therapy Evaluation and Treatment of Patients with Low Back Pain: Recent research findings. *Current Concepts in Orthopedic Physical Therapy 4th Edition*, Orthopedic Section, APTA, 2016.

Beattie PF, McClure P. Principles of Evidence-Based Practice Applied to Manual Therapy. (Chapter) *Orthopedic Manual Physical Therapy*. Wise CH, Editor. FA Davis Co., Philadelphia, PA . 2015. Pg 38-52.

Beattie PF. Physical Therapy Evaluation and Treatment of Patients with Low Back Pain: Recent research findings. *Current Concepts in Orthopedic Physical Therapy 3rd Edition*, Orthopedic Section, APTA, Inc., 21.2.8;2011.

Beattie PF. Structure and Function of the Bones and Joints of the Lumbar Spine (Chapter in) *Kinesiology: Mechanics and Pathomechanics of Human Motion*, Oatis C. Lippincott Williams and Wilkins, Philadelphia. 2003, pg 539-564. Revision 2015.

Beattie PF. The Spine. (Chapter in): *Orthopedic Review*. Ed. by Loth TS, Wadsworth C., CV Mosby, Co. St Louis, Mo. 1998, pg 87-134.

Beattie PF. MRI Findings and Low Back Pain. APTA Continuing Education Series, No. 3, Low Back Pain. PT Magazine, June 1997

Beattie PF. Degenerative Diseases of the Hip: Home Study Course 97-1. Orthopedic Section, APTA, Inc., 1997.

Beattie PF. The Hip. (Chapter in) *Orthopedic and Sports Physical Therapy*, 3rd ed. edited by Malone T., McPoil T., and Nitz A. Mosby Yearbook, Inc. 1996 pg 459-508

Beattie PF. Anatomy of the Lumbar Spine: Home Study Course 94-2. Orthopedic Section, APTA, Inc., 1994.

Grant Activity

In-review

2016 \$999,000.00 ""Central sensory-motor activation as a key mechanism of spinal manipulative therapy"" Co-Principal Investigator. PA-10-209 RO1 Research Grant National Center for Complementary and Integrative Health (NCCIH).

Funded

2015-2016 \$14,816.00 Project/Proposal Title "Advancing evidence-based care for recurrent low back pain through expanding the scope of doctoral training and establishing a unique scholarly network" USC Visiting Scholar's Program

2012-2013 \$24,000.00 "A between-provider comparison of physical therapy utilization within physician-owned physical therapy practices." Co-principal investigator. Co-funded by the American Physical Therapy Association and the Private Practice Section of the American Physical Therapy Association.

2011-2012 \$24,000.00 "A comparison of active vs passive treatments administered physical therapists in different practice environments. Co-principal investigator. Funded by the American Physical Therapy Association.

2008 \$6,000.00 "Effect of joint mobilization and exercise on the water diffusion in the lumbar intervertebral disc." Principal Investigator. Funded by the Arnold School of Public Health, University of South Carolina.

2007 \$6,000.00 "Use of diffusion-weighted magnetic resonance imaging to measure water diffusion in the lumbar intervertebral disc." Principal Investigator. Funded by the McCausland Brain Imaging Center, University of South Carolina.

2002-2005 \$1,200,000.00 "Effectiveness of the VAX-D Protocol for the Treatment of Chronic, Activity-Limiting Back Pain" Co-investigator. Funded by Independence Blue Cross of Pennsylvania.

Unfunded Applications

2015 \$999,000.00 "CNS Effects and Key Modulators to Spinal Manipulative Therapy" Co-Principal Investigator. PA-10-209 RO1 Research Grant National Center for Complementary and Integrative Health (NCCIH).

2015 \$93,174.00 "An Imaging Model To Investigate Mechanisms Associated With Chronic Back Pain" Principal Investigator. ASPIRE II Series - USC Internal Grant

2015 \$275,000.00 "Validation of an assessment protocol for use in mechanistic studies of mind-body therapies" Principal Investigator. An R21 grant submitted to the National Center for Alternative and Complementary Medicine.

2014 \$450,000.00 "Dry Needling and Supportive Therapies." Principal Investigator. An R34 grant submitted to the National Center for Alternative and Complementary Medicine.

2014 \$72,424.00 "Development of An Innovative Approach that Combines Magnetic Resonance Imaging of Muscle and Brain as a Way to Identify Mechanisms Associated

with Chronic Back Pain: The First Step Toward Creation of a Multidisciplinary Center for the Study of Musculoskeletal Pain” Principal Investigator. ASPIRE Series – USC Internal Grant

2014 \$275,000.00 “Gyrotonic practice in the management of chronic low back pain” Co-investigator. An R21 grant submitted to the National Center for Alternative and Complementary Medicine.

2013 \$ 62,950.00 “The Use of Imaging to Determine the Contribution of Musculoskeletal Structures to Changes in Pain and Circulating Biomarkers Following Treatment for Chronic Back Pain: A Multidisciplinary Study Between Investigators in the USC Arnold School of Public Health and the USC School of Medicine” ASPIRE Series – USC Internal Grant

2010 \$275,000.00 “Physiologic Response of Lumbar Discs and Analgesia following Spinal Manipulation.” Principal Investigator. An R21 grant submitted to the National Center for Alternative and Complementary Medicine

2009 \$275,000.00 “The Effect of Manual Therapy on Lumbar Diffusion-weighted Imaging.” Principal Investigator. An R21 grant submitted to the National Center for Alternative and Complementary Medicine. Scored 1.8

2007-2009 \$275,000.00 “Use of Magnetic Resonance Imaging to Measure Water Diffusion Into the Lumbar Intervertebral Disc: A Pilot Study Describing an Innovative Approach.” Principal Investigator. An R21 grant submitted to the National Center for Alternative and Complementary Medicine.

Awards

Jules M. Rothstein Golden Pen Award. This was awarded in 2012 by the American Physical Therapy Association for Excellence in Scientific Writing

Catherine Worthingham Fellowship. This was awarded in 2010 for Outstanding Service to the American Physical Therapy Association

Memberships in Scientific/Professional Societies

American Physical Therapy Association 1976 to present, Section memberships: Orthopedics 1979 to present, Research 1985 to present

Wilderness Medicine Society 2010 to present

Positions Held in Scientific/Professional Societies

Member, Research Committee for the New York Chapter of the American Physical Therapy Association 1995 to 1998

Member, Research Committee for the Orthopedic Section of the American Physical Therapy Association 1990 to 1999; 2003-2007

Reviewer, Practice Parameters Task Force, American Physical Therapy Association 1993

Service and Advisory Positions

Member, Advisory Panel for Clinical Guideline Development. Orthopedic Section of the American Physical Therapy Association 2016-present

Chair, Data Safety Management Board: "Optimization of Spinal Manipulative Therapy (SMT) Protocols", Grant Number: 1UH3AT009293-01. Awarded by the National Center for Complementary and Integrative Health. Principal Investigator: Julie Fritz, University of Utah. 2016-present

Grant reviewer, National Center for Complementary and Integrative Health ZAT SM (41) Mind and Body Interventions 2016

Grant reviewer, National Center for Complementary and Integrative Health Training. ZAT 1SM (40) 2016

Grant reviewer, Musculoskeletal Rehabilitation Sciences Study Section; Musculoskeletal, Oral and Skin Sciences Integrated Review Group, CENTER FOR SCIENTIFIC REVIEW, NIH. 2015

Member, Search Committee for Editor *Journal of Orthopedic and Sports Physical Therapy* 2014

Advisory Member to Board of Directors, *Journal of Orthopedic and Sports Physical Therapy* 2007-2014; 2015-present

Full Board Member, HSR-6 subcommittee of the VA Health Services Research and Development (HSR & D) Scientific Merit Review group. 2009 to 2015.

Member, International Advisory Board, *Journal of Physiotherapy* (Australia), 2013-2017

Chair, Human Studies Subcommittee-Institutional Review Board, Dorn VA Hospital, Columbia, SC July 2007 to 2010 (Member from 2003 to 2005; Vice-Chair 2005-2007)

Member, Research and Development Committee, Dorn VA Hospital, Columbia, SC May 2003 to 2010

Member, Editorial Review Board, *Journal of Orthopedic and Sports Physical Therapy*, 2003-present

Member Editorial Board, *Journal of Occupational Rehabilitation* 2007-present

Member, Scientific Review Board, SeniorSMART, Columbia, SC 2009-present

Member, Research Advisory Board, American Physical Therapy Association 1998 to 1999, Chair 2000

Member, Research Agenda Task Force, American Physical Therapy Association 1998

Ad Hoc Grant Reviewer, Geriatrics and Rehabilitation Medicine (GRM), Special Emphasis Panel, 1998-2000

Ad Hoc Reviewer, IAR, NIH Special Emphasis Review Panel (Quality Measurement and Intervention Effectiveness), 2008 to present

Editorial Advisory Board, *Orthopedic Practice*, 1995 to 1996

Editor, Orthopedic Physical Therapy Home Study Courses, Orthopedic Section, APTA, 1994-1996

Editorial Advisory Board, PT Magazine, 1992 to 2008

Manuscript reviewer for *Medicine and Science in Sports and Exercise* to 2002 to present

Manuscript reviewer for *Physiotherapy Theory and Practice* 2002 to present

Manuscript reviewer for *Journal of Occupational Rehabilitation*, 1994 to present

Manuscript reviewer for *Journal of Orthopedic Physical Therapy*, 1989 to 2003

Manuscript reviewer for *Physical Therapy*, 1985 to present

Manuscript reviewer for *Archives of Physical Medicine and Rehabilitation* 2004-present

Manuscript reviewer for *Journal of Clinical Epidemiology* 2007-present

Manuscript reviewer for *Complementary and Alternative Medicine* 2007-present

Scientific and Professional Presentations: Visiting Professor/Guest Lecturer at Universities

Guest Lecturer: "Lumbar Diffusion Weighted Imaging" Visiting Scholar's Seminar.
University of Florida, Gainesville, FL., April 2011.

Visiting Professor, "Assessing relationships between pathology, symptoms and outcome for patients with low back pain", Northern Arizona University, Yearly graduate course, Flagstaff, AZ. 2001-2006

Guest Lecturer, "The Use of Lumbar Magnetic Resonance Imaging and Self Report Measures in Clinical Decision Making" February 2000, Columbia University, NY, NY

Guest Lecturer, "Evaluation of the Individual with Work-Related Low Back Pain", Uniformed Services University of the Health Sciences, Washington, D.C. August 1996, 1997

Guest Lecturer, "The Use of Lumbar Magnetic Resonance Imaging and Self Report Measures in Clinical Decision Making" May 1997, Hahnemann University, Philadelphia, Pa.

Guest Lecturer, "Evaluation of the Painful Shoulder" University of Rochester, College of Medicine, Department of Physical Medicine, October 28, 1995

Guest Lecturer, "Research Issues in Low Back Pain", University of Rochester, College of Medicine, Department of Physical Medicine, January 20, 1995

Guest Lecturer, "Epidemiological Factors in Low Back Pain", Hahnemann University Philadelphia, Pa. May 1994

Visiting Professor, University of Illinois at Chicago, Department of Physical Therapy, Chicago, IL., PT 307 "Kinesiology," January 6-10, 1992, January 4-8, 1993, January 3-7, 1994, January 2-5, 1995, January 2-5, 1996

Guest Lecturer, "The Pathomechanics of the Spine" University of Illinois at Chicago, Department of Physical Therapy, Chicago, IL., October 1990, March 29, April 1, September 9, 1991

Guest Lecturer, "Overview of Physical Therapy Treatment and Respiratory Disorders," University of New Mexico, Division of Physical Therapy, Albuquerque, NM., January 25, 1991

Guest Lecturer, "Evaluation of Low Back Dysfunction," University of New Mexico, Division of Physical Therapy, Albuquerque, NM., March 22, 25, 1991

Guest Lecturer, "Mechanics of the Spine and Extremities," University of New Mexico, School of Medicine, Department of Anatomy, Albuquerque, NM., Fall 1990 to 1993

Guest Lecturer, "Physical Therapy Management of the Lumbar Spine," Medical College of Virginia, Department of Physical Therapy, Richmond VA., September 1985

Guest Lecturer, "Muscle Mechanics and Orthopedic Rehabilitation," University of Florida, Department of Physical Therapy, Gainesville, FL., February 1981

Guest Lecturer, "Techniques for Chest Physical Therapy," University of Florida, Department of Physical Therapy, Gainesville, FL., October 1976

Scientific and Professional Presentations: Non-University

"Medical Imaging for the Advanced Practitioner" Manual Therapy Fellowship Meeting, Columbia, SC, December 2015

"Evidence-Based Practice in Rehabilitation 2105: Advantages and Challenges" Palmetto Health Rehabilitation Services Symposium, Columbia, SC September 2015

"Medical Imaging for the Advanced Practitioner" Manual Therapy Fellowship Meeting, Columbia, SC, December 2014

"The Influence of Manual Therapy on the Lumbar Inter-Vertebral Disc: One Piece of a Large Puzzle" Manual Therapy Fellowship Meeting, Columbia, SC, October 2014

"The Immediate Change in Low Back Pain Intensity Following Spinal Manipulative Therapy is Related to Differences in Diffusion of Water in the Intervertebral Discs of the Upper Lumbar Spine and L5-S1" Combined Sections Meeting APTA, Las Vegas, NV, February 2014.

"A Comparison of Active vs Passive Physical Therapy Treatments Administered in Different Practice Environments" (poster) Annual Meeting of the Private Practice Section of the APTA, Las Vegas, NV, October 2012

"Diffusion Weighted Magnetic Resonance Imaging of the Lumbar Intervertebral Disc: Preliminary Data and Future Directions" Scientific Meeting of International Federation of Manual Physical Therapists, Quebec City, CA, October, 2012

"A Comparison of Active vs Passive Physical Therapy Treatments Administered in Different Practice Environments" Board of Directors Meeting, American Physical Therapy Association, Washington, DC, April 2012.

"The Immediate Reduction in Low Back Pain Intensity Following Lumbar Joint Mobilization and Prone Press-Ups is Associated with Increased Diffusion of Water in the L5-S1 Intervertebral Disc" Combined Sections Meeting, San Diego, CA, February 2010.

"The Relationship Between Patient Satisfaction with Physical Therapy Care and Global Rating of Change Reported by Patients Receiving Worker's Compensation." Combined Sections Meeting, San Diego, CA February 2010.

"Preliminary Validation of a Patient Satisfaction Instrument for Individuals Receiving Out-Patient Physical Therapy Care in a Women's Health Clinic" Combined Sections Meeting, San Diego, CA February 2010.

"Physical Therapists' Inclusion of Advising/Teaching Future Health Problem Avoidance and Injury Prevention in Outpatient Care" (co-presenter) Combined Sections Meeting, San Diego, CA, February 2010.

"The Immediate Change in the Diffusion of Water in Lumbar Intervertebral Discs Following a Single Session of Lumbar Joint Mobilization Compared to a Single Session of Prone Lying" Combined Sections Meeting, APTA, Las Vegas, NV, February 2009

"The relationship between disc height and diffusion of water in degenerative lumbar inter-vertebral discs." Combined Sections Meeting, APTA, Nashville, TN, February 2008

"The Immediate Change in the Diffusion of Water in Lumbar Intervertebral Discs Following a Single Session of Lumbar Joint Mobilization Compared to a Single Session of Prone Lying" Combined Sections Meeting, APTA, Boston, MA, February 2007

"The Lumbar Spine: Strategies to Assist Treatment Planning for Patients with Low Back" Pain South Carolina Physical Therapy Association Spring Conference, Greenville, SC April 2007

"The Use of Magnetic Resonance Imaging to Quantify Diffusion of Water in Normal and Abnormal Intervertebral Discs" Combined Sections Meeting, APTA, Boston, MA February 2007

"Clinical Decision Rules" International Symposium on Evidence Based Practice. San Francisco, CA November 2005

"The MedRisk Instrument for Measuring Patient Satisfaction with Physical Therapy Care (MRPS): A psychometric analysis" Combined Sections Meeting, APTA, Tampa, FL. February 2005

"Evidence Based Practice: Addressing Clinical Uncertainty". International Symposium on Evidence Based Practice. Philadelphia, PA. April 2004

"Associations between pathology, symptoms and outcome for people with low back pain" Spring Conference, Florida Chapter of APTA, Orlando, FL, March 2004

"Understanding Back Injuries in Sport" Strength and Conditioning Seminar, USC, June 2003

"Therapeutic exercise and low back pain" Division of Spine Surgery, Dept of Orthopedics University of Rochester, Primary Care Conference, Rochester, NY November, 1998 and 1999

"Anatomy of the Shoulder Girdle Complex" Dept of Orthopedics University of Rochester, Primary Care Conference, Rochester, NY, March 1999

"Lumbar magnetic resonance imaging: General principles and diagnostic efficacy" National meeting APTA, Orlando, Florida, June 1998

"Relationship of sport participation and lower extremity osteoarthritis" Division of Sports Medicine, Dept of Orthopedics University of Rochester, Primary Care Conference, Rochester, NY March 1998

"Relationship between pain distribution and lumbar magnetic resonance imaging findings" Combined Sections Meeting, APTA, Boston, MA February 1998

"Integrating research and clinical practice in the treatment of low back pain" Combined Sections Meeting, APTA, Atlanta, GA, Feb 1996 and February 1997

"The use of a patient-orientated protocol for the evaluation of patients with low back pain" World Conference in Physical Therapy, Washington, D.C. June 1995

"Outcome assessment in low back pain" Monroe Task Force, Rochester, NY, April 1995

"Effect of Lordosis on the Position of the Nucleus Pulposus in Supine Subjects" Combined Sections Meeting, APTA, Reno, NV., February 1995

"The Anatomy of Lumbar Spine" Sports Medicine in Primary Care, University of Rochester Department of Orthopedics, Rochester, New York, December 1994

"Issues Relating to Research and Clinical Care of Patients with Low Back Pain" Bakersfield, Ca. September 1994

"Integrating Basic, Clinical and Applied Science: The Spine" Combined National Conference APTA, CPA, Toronto, Canada, June 1994

"The Uses and Misuses of the Pathoanatomical Diagnosis in the Evaluation and Treatment of Patients with Low Back Pain" American Physical Therapy Association, Combined Sections Meeting, New Orleans, La. February 1994.

"Low Back, Hip and Sacroiliac Joint" New Mexico Chapter of the American Physical Therapy Association, Fall Meeting, Las Cruces, NM October 1992.

"Anatomy of the Hip Joint" New Mexico Chapter of the American Physical Therapy Association, Annual Meeting, Albuquerque, NM., May 1992

"Manual Therapy, Round Table Discussion," American Physical Therapy Association, Combined Sections Meeting, San Francisco, CA., February 1992

"Anatomy of The Knee Joint," Care of the Competitive Athlete, A Team Approach Conference, University of New Mexico School of Medicine, Department of Orthopedics, Division of Sports Medicine, Albuquerque, NM., August 1991

"Low Back Problems in the Competitive Athlete," Care of the Competitive Athlete, A Team Approach Conference, University of New Mexico School of Medicine, Department of Orthopedics, Division of Sports Medicine, Albuquerque, NM., August 1991

"Physical Therapy for Painful Musculoskeletal Disorders," Advances in Internal Medicine Conference, University of New Mexico School of Medicine, Department of Medicine, Albuquerque, NM., March 1991

"Anatomy of the Lumbar Spine," New Mexico Chapter of the American Physical Therapy Association, Annual Meeting, Albuquerque, NM., May 1990

"Therapy for Cervical Spine Sprains," Practical Orthopedics in the Primary Care Setting Conference, University of New Mexico School of Medicine, Department of Orthopedics and Rehabilitation, Albuquerque, NM., April 1990

"Exercise as a Treatment for Low Back Pain," Practical Orthopedics in the Primary Care Setting Conference, University of New Mexico School of Medicine, Department of Orthopedics and Rehabilitation, Albuquerque, NM., April 1990

"Rehabilitation of Running-Related Injuries," Practical Orthopedics in the Primary Care Setting Conference, University of New Mexico School of Medicine, Department of Orthopedics and Rehabilitation, Albuquerque, NM, April 1990

"Athletic Injuries in Primary Care Practice," Advances in Internal Medicine Conference, University of New Mexico School of Medicine, Department of Medicine, Albuquerque, NM., February 1990

"Evaluation and Treatment of Athletes with Low Back Pain," New Mexico Athletic Trainers Annual Conference, Las Cruces, NM., July 1989

"Anatomy of the Shoulder Girdle," New Mexico Chapter of the American Physical

Therapy Association, Annual Meeting, May 1989

"Evaluation and Treatment of Lower Quarter Dysfunction," Southwest District of the New Mexico Chapter of the American Physical Therapy Association, Las Cruces, NM., February 1989

"Gross Anatomy and Mechanics of the Knee Joint," New Mexico Chapter of the American Physical Therapy Association, Annual Meeting, Albuquerque, NM., April 1988

"Physical Therapy for the Arthritic Shoulder," Rheumatology in Primary Care, University of New Mexico School of Medicine, Department of Medicine, Albuquerque, NM., March 1988

"Problem Solving Approaches for the Patient with Cervical Spine or Shoulder Dysfunction," Southwest District of the New Mexico Chapter of the American Physical Therapy Association, Las Cruces, NM., February 1988

"Reliability of Leg Length Measurements in a Clinical Setting," American Physical Therapy Association, Annual Conference, San Antonio, TX., July 1987

"Evaluation and Treatment of Low Back Dysfunction: Joint and Soft Tissue Mobilization," New Mexico Chapter of the American Physical Therapy Association, Annual Meeting, Albuquerque, NM, May 1987

"Exercise as a Treatment for Lower Back Pain," Practical Orthopedics in the Primary Care Setting Conference, University of New Mexico School of Medicine, Department of Orthopedics and Rehabilitation, Albuquerque, NM., April 1987

"Rehabilitation of Ankle and Knee Injuries," Practical Orthopedics in the Primary Care Setting Conference, University of New Mexico School of Medicine, Department of Orthopedics and Rehabilitation, Albuquerque, NM., April 1987

"Reliability of Measuring Lumbar Spine Backward Bending," American Physical Therapy Association, Annual Conference Chicago, IL., June 10, 1986

"An Evaluation of the Use of Student Teams for Teaching Gross Anatomy in a Physical Therapy Curriculum," American Physical Therapy Association, Combined Sections Meeting, Atlanta, GA., February 1987

"Evaluation and Treatment of Cervical Spine Dysfunction," Florida Chapter of American Physical Therapy Association Meeting, Orlando, FL., October 1983

"Private Practice Physical Therapy in Sports Medicine," American College of Sports Medicine Annual Conference, Miami, FL., May 1981

Continuing Education Workshops Presented

"Examining Associations between Pathology, Symptoms and Outcome for People with Low Back Pain" Florida Physical Therapy Association March 2004 Spring Conference, Orlando, Florida March 2004

"Strategies for Clinical Assessment and Treatment Planning for Patients with Low Back Pain" APTA State Chapter Meetings: Ohio, April 1999; Montana, May 1999; Florida, August 1999; Pennsylvania October 1999

"Strategies for Clinical Decision Making in Low Back Pain", Seattle, WA. May 1997

"Low Back, Hip and Sacroiliac Joint" review for Advanced Orthopedic Competencies" Orthopedic Section of APTA, Baltimore, Md., July 1992 and Detroit, MI, November, Seattle, Washington, July 1993, St. Louis, Mo. November 1994. Williamsburg, VA July 1994, Minneapolis, MN., November 1994, Albuquerque, NM July 1995, Orlando, FL. November 1996

"Issues of Clinical Decision Making for Patients with Low Back Pain", Pennsylvania Chapter APTA, Pittsburgh, Pa., March 25, 1995

"Clinical Examination Procedures for Orthopedic Physical Therapy," Five four-hour biweekly lectures, St. Joseph Rehabilitation Hospital, Albuquerque, NM., August - October 1991, Albuquerque VA Hospital, October-December 1992

"Evaluation and Treatment of the Painful Cervical Spine," University of New Mexico Hospital, Albuquerque, NM., September 1991

"Evaluation and Treatment of Individuals with Low Back Pain," Stuart, FL., January 1991

"Gross Anatomy of the Upper Extremity: a Review with Clinical Implications," University of New Mexico Hospital, Albuquerque, NM., August 1990

"Gross Anatomy: A Review with Clinical Implications," 4 day course, Albuquerque, NM., July 1988

"The Treatment of Low Back Pain: A Combined Approach," three day course, Richmond, VA., September 1985

"The Treatment of Low Back Pain: A Combined Approach," Lake City, FL., 1985

"Evaluation and Treatment of the Cervical Spine using Joint Mobilization techniques," 2 day course, Stuart, FL., August 1983

"Introduction to Manual Therapy of the Lumbar Spine," Stuart, FL., May 1982

"Evaluation and Treatment of Low Back Pain using Joint Mobilization Techniques," 2 day course, Miami, FL., November 1981, Melbourne, FL., August 1981 Gainesville, FL., January 1982

Service to the University/College on Committees

Member, Search Committee for Athletic Training Program, 2013 to present

Co-Chair, Search Committee for DPT Program Faculty Position, 2012- 2013

Co-Chair, Search Committee for DPT Program Director's Position, 2011-2012

Member, Information Technology Committee, School of Public Health, 2002-2003

Member, Research Advisory Committee, School of Public Health, 2003-2004

Member, Evaluation Committee, Arnold School of Public Health 2005

Member, DEXA Scan Advisory Board, Department of Exercise Science and Physical Therapy 2002-2006

Teaching Experience

University of South Carolina: 2001-present

PHYT 701: Human Musculoskeletal Anatomy. Lecture and discussion. Principal Instructor, 5 Credit Hours. 2011 to present

ANAT-601/701: Human Anatomy: Lecture and dissection, team-taught with Medical School faculty/ 8 credit hours. 2001-2010

PHYT 750: Orthopedics I: Regional Overview of Orthopedic Disorders and Treatment. Lecture, discussion and lab. 4 credit hours. Principal Instructor. 2001 to present

PHYT 751: Orthopedics II: Regional Overview of Orthopedic Disorders and Treatment. Lecture, discussion and lab. 3 credit hours. Principal Instructor. 2001-present

PHYT 806: Clinical Pathology/Differential Diagnosis Lecture and discussion. Principal Instructor. 3 credit hours. 2001-2010.

PHYT 788: Evidence-Based Practice. Lecture and discussion. Co-instructor. 3 credit

hours. 2004-present

EXSC 784: Unit on Pulmonary Disorders. Co-instructor. 3 credits. 2013-present

Ithaca College, University of Rochester Campus: 1993-1999

70-310 Human Anatomy: Gross Anatomy Lecture and Dissection. Principal instructor.
6 Credit Hours. Principal Instructor

70-613 Orthopedics: Regional Overview of Orthopedic Disorders and Treatment.
Principal instructor. 3 Credit Hours. Principal Instructor

70-607 Research I: Introduction to Clinical Measurement, Research Design and Analysis,
Principal Instructor. 2 Credit Hours

70-608 Research II: Systematic Review of Literature in Given Topics, Course coordinator.
2 Credit Hours

University of New Mexico 1985-1990:

PT 321: Human Anatomy: Gross anatomy lecture and dissection. Principal instructor. 6
credit hours 1986-1990

PT 370: Kinesiology/Functional Anatomy: General and regional approach to the
understanding of normal human locomotor system with the emphasis on muscle and
joint function. Principal instructor 3 credit hours 1986-1989.

PT 330: Professional Development: Introduction to the research process, critical review
of literature. Principal instructor. 2 credit hours 1986-1989

PT 341: Survey of Medical Sciences I: Pathology, An overview of general concepts of
disease processes. Principal instructor. 2 credit hours 1986-1989

PT 352: Evaluation Procedures I: muscle testing, goniometry, palpation postural and
functional evaluation, clinical problem solving. Principal instructor. 3 credit hours. 1986-
1990

PT 342: Survey of medical sciences II: Orthopedics, Regional overview of Orthopedic
disorders and treatments. Principal instructor. 2 credit hours 1986-1990

PT 302: Therapeutic exercise II: Unit on Chest Physical Therapy. Principal instructor.
1986-1989

PT 499: Independent Study: Senior research project. Advise and assist students with

planning, implementation, and interpretation of the senior research project. Principal instructor. 1-3 credit hours 1986-1989