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**Sharon Wang-Price, Ph.D.**  
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### **Academic Background**

Ph.D. Texas Woman's University, Houston, TX, Physical Therapy, 1999.

M.S. University of Pittsburgh, Pittsburgh, PA, Health Related Professions, Sports Physical Therapy, 1990.

B.S. National Taiwan University, Taipei, Taiwan, Physical Therapy, 1987.

### **Professional Certifications**

Fellow of American Academy of Orthopaedic Manual Physical Therapy (FAAOMPT), 2009

Certified Orthopedic Manual Physical Therapist (COMT) & Fellow. NAIOMT, 2008

Board Certified Clinical Specialist in Orthopaedic Physical Therapist (OCS), 1999

Texas State Physical Therapy License, 1991

Pennsylvania State Physical Therapy License, 1989, PA.

### **Professional Memberships**

American Society of Biomechanics, 2012-Present

Texas Society of Allied Health Professions, 2011-Present

American Academy of Orthopaedic Manual Physical Therapy, 2004-Present

American Physical Therapy Association, 1991-Present

Texas Physical Therapy Association, 1991-Present

### **Work Experience**

#### **Work Experience**

##### **Academic**

Professor & Coordinator of Professional Studies, School of Physical Therapy, Texas Woman's University (September, 2012 - Present), Dallas, Texas.

Associate Professor, School of Physical Therapy, Texas Woman's University (September, 2006 - August, 2012), Dallas, Texas.

Assistant Professor, School of Physical Therapy, Texas Woman's University (September, 2000 - August, 2006), Dallas, Texas.

Graduate Student Assistant, University of Pittsburgh, Department of Physical Therapy (September, 1989 - May, 1990), Pittsburgh, Pennsylvania.

##### **Non-Academic**

PRN Physical Therapist, Baylor Institute of Rehabilitation Outpatient Services (previously Select Physical Therapy & HealthSouth) (June, 2006 - Present), Dallas, Texas.

PRN Physical Therapist, Baylor Tom Landry Center (December, 2005 - January, 2007), Dallas, Texas.

PRN Physical Therapist, Uptown Physical Therapy (2005), Dallas, Texas.

PRN Physical Therapist, Concentra Medical Center (December, 2000 - 2005), Dallas, Texas.

Senior Physical Therapist and Clinical Instructor, Concentra Medical Center (June, 1995 - August, 2000), Houston, Nebraska.

PRN Physical Therapist, Stambush Physical Therapy (January, 1995 - June, 1995), Houston, Texas.

Staff Physical Therapist, Atkinson Manual Physical Therapy Clinic (February, 1994 - July, 1994), Houston, Texas.

Fellow/Staff Physical Therapist, HealthSouth Rehabilitation Center, Sports Medicine Program (August, 1994 - December, 1994), Columbia, Missouri.

Staff Physical Therapist/Clinical Specialist, St. Joseph Hospital, SportsCare, Department of Rehabilitation (October, 1991 - January, 1994), Houston, Texas.

Staff Physical Therapist/Clinical Instructor, Department of Physical Therapy, University of Pittsburgh Medical Center, Presbyterian Hospital (June, 1990 - July, 1991), Pittsburg, Pennsylvania.

Part-time Physical Therapist, University of Pittsburgh Medical Center, Sports Medical Centers (October, 1990 - July, 1991), Pittsburg, Pennsylvania.

Staff Physical Therapist & Acting Director, Chung-Shan Hospital, Department of Physical Therapy (June, 1987 - July, 1988), Taipei, Taiwan.

## **Teaching**

### **Courses Taught**

**Courses from the Teaching Schedule:** Advanced Diagnostic Imaging, Advanced Differential Diagnosis in Orthopedic Physical Therapy, Advanced Evaluation and Mobilization: Lower Quadrant, Advanced Evaluation and Mobilization: Upper Quadrant, Advanced Practicum in Physical Therapy, Applied Ortho Management, Applied PT Eval, Basic Skills in Physical Therapy, Critical Inquiry in Physical Therapy I, Critical Inquiry in Physical Therapy I, Critical Inquiry in Physical Therapy II, Critical Inquiry in Physical Therapy II, Critical Inquiry in Physical Therapy III, Critical Inquiry in Physical Therapy III, Differential Diagnosis in Orthopedic Physical Therapy, Differential Diagnosis of Orthopedic Physical Therapy, Dissertation, Eval & Assess in PT, Examination, Evaluation, and Outcomes, Extremity Manual Therapy, Field Research in Physical Therapy, Gross Human Anatomy, Independent Study, Independent Study, Intermediate Evaluation & Mobilization: Lower Quadrant, Intermediate Evaluation & Mobilization: Lower Quadrant, Intermediate Evaluation & Mobilization: Upper Quarter, Intermediate Evaluation and Mobilization: Upper Quadrant, Internship I, Introduction to Physical Therapy Practice, Medical Kinesiology, Musculoskeletal Physical Therapy: Lower Quadrant, Musculoskeletal Physical Therapy: Upper Quadrant, Patient Care Seminar, Primary Care in Physical Therapy, Professional Paper, Radiologic Review for Physical Therapist, Research in Physical Therapy, Special Topics, Special Topics, Special Topics, Spinal Manual Therapy, Supervised Teaching in Physical Therapy, Ther Act - Ortho

### **Teaching Activities**

#### **Doctoral Dissertation Student Committee - Chair**

2019 - *Effectiveness of spinal stabilization exercises on movement performance in adults with subacute and chronic low back pain: A randomized clinical trial*<sup>1</sup> student.

2019 - *Impact of wearing a robotic exoskeleton on gait parameters and muscle activity in individuals with incomplete spinal cord injury*

2018 - *The validity and reliability of the Vail Sport test™ as a measure of performance following anterior cruciate ligament reconstruction.*

2017 - *The effects of the lumbopelvic manipulation on the fatigability of the back and hip muscles in adults with chronic low back pain*

2017 - *Effectiveness of cervicothoracic junction manipulation versus placebo on shoulder muscle strength and electromyographic amplitude in patients with subacromial syndrome*

2015 - *Regional manual therapy and motor control exercise for the management of chronic low back pain with hip and spine motion loss: A randomized clinical trial*

2014 - *Comparison of an eccentric exercise intervention to a concentric exercise intervention in adults with subacromial impingement syndrome*

2014 - *Effect of lumbopelvic manipulation on hip and knee neuromuscular activity, pain intensity, level of functional activity in people with patellofemoral pain syndrome*

2013 - *Effectiveness of spinal stabilization exercises for low back pain in adolescents with idiopathic scoliosis.*

2013 - *A randomized clinical trial of the effectiveness of the compression belt for patients with sacroiliac joint pain.*

2012 - *Comparison of early rehabilitation with usual care following anterior cervical fusion: A randomized controlled trial.*

2008 - *Effectiveness of surface electromyographic biofeedback-triggered neuromuscular electrical stimulation on knee rehabilitation.*

2008 - *Comparison of cervical spine manipulation and vibratory inhibition in patients with mechanical dysfunction of the cervical spine.*

#### **Doctoral Dissertation Student Committee - Member**

2019 - *Effectiveness of spinal stabilization exercises on dynamic balance in adults with subacute and chronic low back pain: A randomized clinical trial* 1 student.

2018 - *Reliability and validity of the ACTIVE-mini for quantifying movement in infants with spinal muscular atrophy.*

#### **Doctoral Student Project Committee - Chair**

2018 - *Effects of different dry-needling techniques on lumbar multifidus muscle activation in healthy adults.* 2 students.

2018 - *Comparison of gait parameters during barefoot, nonslip sock and conventional sock walking in young and older adults.* 2 students.

2018 - *Effects of dry needling on lumbar multifidus muscle activation and pressure pain threshold in patients with low back pain. (In progress)* 2 students.

2018 - *Effects of transcranial magnetic stimulation on patients with chronic pain. (In progress).* 2 students.

2017 - *Between-day reliability of lumbar multifidus muscle activity quantification using electromyography.* 2 students.

2017 - *Psychometric properties of pressure pain threshold in patients with neck-shoulder pain and tenderness.* 2 students.

2017 - *Sensory thresholds in adults with and without chronic pain.* 2 students.

2016 - *Kinematic, kinetic and electromyographic analysis of gait in patients with diabetic foot neuropathy – Data analysis.* 2 students.

2016 - *Effects of adding tactile stimuli to verbal instructions for lumbar multifidus muscle activation in patients with low back pain* 2 students.

2016 - *Comparison of pressure pain threshold and muscle tone in adults with and without shoulder-neck syndrome.* 2 students.

2015 - *The 1-step, 2-step and mid-gait methods for plantar pressure measurements and 3D gait parameters in healthy adults.* 2 students.

2015 - *Comparison of pressure pain threshold and muscle tone in adults with and without shoulder-neck syndrome - A preliminary report* 2 students.

2015 - *Effects of adding tactile stimuli to verbal instructions for lumbar multifidus muscle activation in healthy adults.* 2 students.

2014 - *Effects of different verbal instructions on lumbar multifidus muscle activation in healthy adults.* 2 students.

2014 - *Three-dimensional kinematic analysis of gait during normal versus target walking.* 2 students.

2014 - *Recovery of back and hip muscle fatigue after the Sorenson test in healthy adults.* 2 students.

2013 - *Manual versus skin-surface device assessments for lumbar segmental mobility in adults with and without low back pain* 2 students.

2013 - *Does a pair of socks change your walk.* 2 students.

2013 - *The short-term effects of lumbopelvic manipulation on hip and knee electromyographic activity in people with patellofemoral pain syndrome - A preliminary report* 2 students.

2013 - *The test-retest reliability of an electromyographic protocol for measuring median frequency of back and hip muscles in healthy adults and patients with chronic low back pain* 2 students.

2013 - *Which variables predict success with lumbopelvic stabilization exercises in patients with sacroiliac joint pain.* 2 students.

2013 - *Submaximal exercise testing in adults with subacromial impingement syndrome for resistance progression.* 2 students.

2012 - *Measurements of cervical multifidus muscle contraction during upper extremity lifts using rehabilitative ultrasound*

*imaging* 3 students.

2012 - *Reliability of hip and knee muscles electromyography amplitude during stepping task.* 2 students.

2012 - *A clinical trial of the effectiveness of the compression belt for patients with sacroiliac joint pain.* 4 students.

2011 - *Response to progressive resisted shoulder exercise program in older adults with and without subacromial impingement syndrome* 3 students.

2011 - *Comparison of the effect of pelvic compression on deep abdominal muscle thickness in persons with sacroiliac joint pain and healthy adults using ultrasound imaging* 4 students.

2010 - *Effect of dry-needling on multifidus contraction in patients clinically diagnosed with lumbar segmental instability.* 2 students.

2010 - *Reliability of cervical multifidus muscle contraction measurement using rehabilitative ultrasound imaging: Comparison of two testing protocols* 2 students.

2010 - *Comparison of dynamic postural stability between healthy controls and chronic low back pain patients.* 2 students.

2010 - *Measurement of supraspinatus muscle thickness at rest and during contracted using rehabilitative ultrasound imaging.* 2 students.

2009 - *Reliability of measurement of cervical multifidus muscle contraction using rehabilitative ultrasound imaging.* 4 students.

2009 - *Identification of postural stability deficits in individuals with chronic low back pain.* 4 students.

#### **Doctoral Student Project Committee - Co-Chair**

2016 - *Does Wearing an Exoskeleton Bionic Suit Affect Lower Extremity Kinematic, Kinetics, and Electromyography during Walking?* 2 students.

#### **Doctoral Student Project Committee - Member**

2018 - *Comparison of the functional movement screen between young active adults and those with chronic low back pain. (In progress)* 2 students.

2017 - *Comparison of the functional movement screen between young active adults and those with chronic low back pain.* 2 students.

2016 - *Assessment of abdominal muscle thickness in post-partum women who have undergone cesarean section as compared to vaginal births.*

#### **Master's Professional Student Project - Chair**

2009 - *Thoracic syrinx in a patient with ankle fracture after a fall.*

2008 - *Comparison of EMG normalization methods for trapezius muscles during dynamic shoulder motions.*

2008 - *Outcome of deep neck flexors exercises in patients with neck pain.* 3 students.

2008 - *Does lumbar posteroanterior mobilization reduce inhibition in hip abductor muscles.* 2 students.

2007 - *Effectiveness of strength and conditioning program on performance of High School Ice Hockey players.* 3 students.

2007 - *Effectiveness of high-velocity low amplitude manipulation in the treatment of a patient with sacroiliac pain.*

2007 - *Proprioception, posture, deep neck flexor muscle strength and endurance in patients with neck pain: validity and reliability of clinical measurements* 3 students.

2006 - *Inter-rater reliability of the cervical biomechanical examination for patients with neck pain between experienced manual therapists and physical therapy students* 2 students.

2006 - *Can physical therapy interventions improve muscle balance between the upper and lower trapezius in patients with neck-shoulder pain* 3 students.

2005 - *Reliability of cervical range of motion measurement using dual inclinometry and advanced performance meter.* 2 students.

2005 - *Reliability of the hand-held dynamometric measurement of isometric knee extensor strength.*

2005 - *Can physical therapy interventions improve muscle balance between the upper and lower trapezius.* 2 students.

2005 - *Effectiveness of two stretching techniques for increasing length in the pectoralis minor.* 3 students.

2004 - *Effectiveness of shoulder rehabilitative exercises in people with painful shoulder.* 2 students.

2004 - *Does lower trapezius strength affect upper trapezius muscle recruitment during reaching activity.* 2 students.

- 2004 - *Effectiveness of two stretching techniques for increasing length in the pectoralis minor*. 2 students.
- 2004 - *Relationship of the menstrual cycle to anterior cruciate ligament laxity as determined by the KT-1000 arthrometer*. 2 students.
- 2003 - *Intra-tester and inter-tester reliability of shoulder muscle strength tests in normal adults*. 2 students.
- 2003 - *A preliminary report on the effectiveness of shoulder rehabilitative exercises in people with painful shoulder*. 2 students.
- 2002 - *The effect of a serratus anterior strengthening exercise program in people with abnormal winging of the scapula*. 2 students.
- 2002 - *The serratus anterior punch test to determine the serratus anterior strength in normal adults*. 2 students.

**Master's Thesis Student Committee - Chair**

- 2007 - *Prescriptive validity of use of a classification system of sacroiliac joint mobility*.
- 2003 - *Reliability and minimal detectable changes of hand-held dynamometric measurements of shoulder muscle strength*.

**Master's Thesis Student Committee - Member**

- 2014 - *Biomechanical effects of therapeutic shoes*.
- 2004 - *Minimal detectable change in grip strength measurements in patients following carpal tunnel release*.

**Intellectual Contributions**

**Intellectual Contributions Grid**

Category	Total
Articles in Refereed Journals	28
Articles-in-Progress (All)	3
Publications in Refereed Conference Proceedings	24
Publications of Non-refereed or Invited Papers	1
Presentations of Refereed Papers	93
Presentations of Non-Refereed Papers	6

**Refereed Articles**

- Swank, C., Wang-Price, S., Gao, F., & Almutairi, S. (2019). Walking in a robotic exoskeleton does not mimic natural gait. *JMIR Rehabilitation and Assistive Technologies*. *JMIR Rehabilitation and Assistive Technologies*, 6 (1), e11023, doi: 10.2196/11023.
- Wang-Price, S., Zafereo, J., Brizzolara, K., Mackin, B., Lawson, L., Seeger D, & Lawson S (2019). Psychometric properties of pressure pain thresholds measured in two positions for adults with and without neck-shoulder pain and tenderness. *Journal of Manipulative and Physiological Therapeutics*, 42 (6), 416-424.
- Hannon, J., Wang-Price, S., Swank, C., Brizzolara, K., Garrison, C., Bothwell J., & Bush C. (2019). The validity and reliability of the Vail Sport Test™ as a measure of performance following anterior cruciate ligament reconstruction. *Physical Therapy in Sport*, 38, 162-169, doi: 10.1016/j.ptsp.2019.05.001.
- Brizzolara, K., Wang-Price, S., & Zafereo, J. (2018). Assessment of abdominal muscle thickness in postpartum women who have undergone cesarean section as compared to vaginal births: a pilot study. *Journal of Women's Health Physical Therapy*, 43 (1), 22-27, doi: 10.1097/JWH.0000000000000113.
- Brizzolara, K., Wang-Price, S., Roddey, T., & Medley, A. (2018). Effectiveness of adding a pelvic compression belt to lumbopelvic stabilization exercises for women with sacroiliac pain: A feasibility randomized clinical trial. *Journal of Women's Health Physical Therapy*, 42 (2), 76-86, doi: 10.1097/JWH.0000000000000102.
- Zafereo, J., Wang-Price, S., Roddey, T., & Brizzolara, K. (2018). Regional manual therapy and motor control exercise for chronic low back pain: a randomized clinical trial. *Journal of Manual & Manipulative Therapy*, 26 (4), 193-202, doi: 10.1080/10669817.2018.1433283.
- Wang-Price, S., Zafereo, J., Brizzolara, K., & Anderson, E. (2018). Effects of tactile feedback on lumbar multifidus muscle activity in asymptomatic healthy adults and patients with low back pain. *Journal of Bodywork and Movement Therapies*, 22,

956-962, doi: 10.1016/j.jbmt.2018.01.001.

- Zapata, K., Wang-Price, S., Fletcher, T., & Johnston, C. (2018). Factors influencing adherence to an app-based exercise program in adolescents with painful hyperkyphosis. *Scoliosis and Spinal Disorders.*, 13, 11, doi: 10.1186/s13013-018-0159-x.
- Hannon, J., Wang-Price, S., Garrison, J. C., Goto, S., & Bothwell, J. (2017). Do muscle strength deficits of the uninvolved hip and knee exist in young athletes before anterior cruciate ligament reconstruction? *The Orthopaedic Journal of Sports Medicine*, 5 (1), doi: 10.1177/2325967116683941.
- Zapata, K., Wang-Price, S., & Sucato, D. (2017). Six-month follow-up of supervised spinal stabilization exercises for low back pain in adolescent idiopathic scoliosis. *Pediatric Physical Therapy*, 29 (1), 62-66.
- Wang-Price, S., Zafareo, J., & Brizzolara, K. (2017). Effects of different verbal instructions on change of lumbar multifidus muscle thickness in asymptomatic adults and in patients with low back pain. *Journal of Manual & Manipulative Therapy*, 25 (1), 22-29, doi: 10.1179/2042618615Y.0000000021.
- Wang-Price, S., Almadan, M., Stoddard, C., & Moore, D. (2017). Recovery of hip and back muscle fatigue following a back extension endurance test. *International Journal of Exercise Science (Online)*, 10 (2), 213-224.
- Zafareo, J., Wang-Price, S., Brown, J., & Carson, E. (2016). Reliability and comparison of spinal end-range motion assessment using a skin-surface device in subjects with and without low back pain. *Journal of Manipulative and Physiological Therapeutics*, 39 (6), 434-442, doi: 10.1016/j.jmpt.2016.05.008.
- Zafareo, J., Devanna, R., Mulligan, E., & Wang-Price, S. (2015). Hip stiffness patterns in lumbar flexion or extension-based movement syndromes. *Archives of Physical Medicine and Rehabilitation*, 96 (2), 292-297, doi: 10.1016/j.apmr.2014.09.023.
- McFarland, C., Wang-Price, S., & Richard, S. (2015). Clinical measurements of cervical lordosis using flexirule and inclinometer methods in individuals with and without cervical spine dysfunction: A reliability and validity study. *Journal of Back and Musculoskeletal Rehabilitation*, 28 (2), 295-302, doi: 10.3233/BMR-140517.
- Zapata, K. A., Wang-Price, S. S., Sucato, D. J., Thompson, M., Trudelle-Jackson, E. T., & Lovelace-Chandler, V. (2015). Spinal stabilization exercises for low back pain in adolescent idiopathic scoliosis: A randomized clinical trial. *Pediatric Physical Therapy*, 27 (4), 396-402, doi: 10.1097/PEP.0000000000000174.
- Zapata, K. A., Wang-Price, S. S., Sucato, D. J., & Dempsey-Robertson, M. (2015). Ultrasonographic measurements of paraspinal muscle thickness in adolescent idiopathic scoliosis: A comparison and reliability study. *Pediatric Physical Therapy*, 27 (4), 119-125, doi: 10.1097/PEP.0000000000000131.
- Brizzolara, K., Wang-Price, S., & Roddey, T. (2015). The effect of pelvic compression on deep abdominal muscle thickness during the active straight leg raise. *International Journal of Therapy and Rehabilitation*, 22 (2), 60-67, doi: 10.12968/ijtr.2015.22.2.60.
- Blume, C., Wang-Price, S., Jackson, E., & Ortiz, A. (2015). Comparison of an eccentric exercise intervention to a concentric exercise intervention in adults with subacromial impingement syndrome. *International Journal of Sports Physical Therapy*, 10 (4), 441-455, doi: 10.3109/09593985.2014.902522.
- Blume, C., & Wang, S. S. (2014). Comparison of supraspinatus muscle thickness changes in persons with subacromial impingement syndrome and asymptomatic adults. *Physiotherapy Theory and Practice: An International Journal of Physical Therapy*, 30 (8) 544-551, doi: 10.3109/09593985.2014.902522.
- Kearns, G., & Wang, S. S. (2012). Medical diagnosis of cubital tunnel syndrome ameliorated with thrust manipulation of the elbow and carpals. *The Journal of Manual & Manipulative Therapy*, 20 (2), 90-95, doi: 10.1179/2042618611Y.0000000019.
- Richard, S. L., Wang, S., & Georgelas, T. (2011). Thoracic syrinx in a patient with ankle fracture after a fall. *Journal of Orthopaedic and Sports Physical Therapy*, 41 (4), 282.
- Wang, S. S., & Meadows, J. (2010). Immediate and carry-over changes of C5-6 joint mobilization on shoulder external rotator muscle strength. *Journal of Manipulative and Physiological Therapeutics*, 33 (2), 102-108.
- Boucher, A., Wang, S., Trudelle-Jackson, E., & Olson, S. (2009). Effectiveness of surface electromyographic biofeedback-triggered neuromuscular electrical stimulation on knee rehabilitation. *North American Journal of Sports Physical Therapy*, 4 (3), 100-109.
- Trudelle-Jackson, E., Sarvaiya-Shah, S. A., & Wang, S. A. (2008). Interrater reliability of a movement impairment classification system for lumbar spine syndromes in patients with chronic low back pain. *Journal of Orthopaedic and Sports Physical Therapy*, 38 (6), 371-376, doi: 10.2519/jospt.2008.2760.
- Wang, S. S., Normile, S. S., & Lawshe, B. T. (2006). Reliability and minimal detectable change determination for serratus anterior muscle strength and endurance. *Physiotherapy Theory and Practice: An International Journal of Physical Therapy*, 22 (1) 33-42.

Wang, S. S., & Trudelle-Jackson, E. J. (2006). Comparison of customized versus standard exercises in rehabilitation of shoulder disorders. *Clinical Rehabilitation*, 20, 675-687.

Wang, S. S., Whitney, S. L., Burdett, R. G., & Janosky, J. E. (1993). Lower extremity muscular flexibility in long distance runners. *Journal of Orthopaedic and Sports Physical Therapy*, 17 (2), 102-107.

## Refereed Proceedings

Alshehre, Y. M., Alkhatami, K., Brizzolara, K., & Wang-Price, S. (2019). Comparison of Y-balance test scores in young adults with and without chronic low back pain. *American Pain Society Scientific Meeting*, 20 (4), The Journal of Pain, S24.

Alkhatami, K., Alshehre, Y. M., Wang-Price, S., & Brizzolara, K. (2019). Using the modified functional movement screen for assessment of movement impairments in young adults with low back pain. *American Pain Society Scientific Meeting*, 20 (4), The Journal of Pain, S24.

Almadan, M., Wang-Price, S., Ortiz, A., & Brizzolara, K. J. (2018). Effects of lumbopelvic manipulation on neuromuscular activity of back and hip muscles in adults with chronic back pain. *Journal of Orthopaedic and Sports Physical Therapy*, 48 (1), A71.

Drummond, K., Wang-Price, S., & Lucido, M. (2018). Manual therapy combined with vestibular exercises in treatment of a patient with chronic cervicogenic dizziness induced after a massage. *Journal of Orthopaedic and Sports Physical Therapy*, 48 (1), A104.

Wang-Price, S., Anderson EM, E. M., Zafereo, J., & Brizzolara, K. J. (2018). Does tactile feedback increase lumbar multifidus muscle activation in asymptomatic healthy adults and patients with low back pain? *Journal of Orthopaedic and Sports Physical Therapy*, 48 (1), A195.

Zafereo, J., Wang-Price, S., Roddey, T., & Brizzolara, K. (2017). Regional manual therapy and motor control exercise for chronic low back pain: a randomized clinical trial. *Journal of Orthopaedic and Sports Physical Therapy*, 47 (1), A28.

Wang-Price, S., Zafereo, J., Brizzolara, K., Sokolowski, L., & Turner, D. (2015). Do three verbal instructions influence lumbar multifidus muscle thickness differently in both asymptomatic adults and patients with low back pain? *American Academy of Orthopaedic Manual Physical Therapy Annual Conference*.

Al Abbad, A., Wang-Price, S., Ortiz, A., Trudelle\_Jackson, E., & Medley, A. (2015). Immediate and carry-over effects of lumbopelvic manipulation on hip and knee electromyography amplitude and pain intensity in people with patellofemoral pain syndrome. *Journal of Orthopaedic and Sports Physical Therapy*.

Blume, C., Wang-Price, S., Trudelle-Jackson, E., & Medley, A. (2015). Effectiveness of concentric versus eccentric rotator cuff and scapular muscle progressive resistance exercises in adults with subcranial impingement syndrome. *Journal of Orthopaedic and Sports Physical Therapy*.

McFarland, C., & Wang-Price, S. (2014). A comparison of clinical outcome between early therapy intervention and usual care in individuals following anterior cervical fusion. *Journal of Orthopaedic and Sports Physical Therapy*.

Zafereo, J., Devanna, R., Mulligan, E.P., & Wang, S. (2014). Hip stiffness patterns in lumbar flexion or extension based movement syndromes. *Journal of Orthopaedic and Sports Physical Therapy*.

Zapata, K., Wang, S., Sucato, D.J, Thompson, M., Trudelle-Jackson, E., Lovelace-Chandler, V. (2014). Effectiveness of spinal stabilization exercises for low back pain in adolescents with idiopathic scoliosis. *Pediatric Physical Therapy*.

Kunder, K.A, Wang, S.S, Sucato, D.J, & Dempsey-Robertson, M. (2012). Comparison of multifidus muscle thickness in adolescents with or without idiopathic scoliosis using rehabilitative ultrasound. *Pediatric Physical Therapy*.

McFarland, C.M (2011). Clinical measurement of cervical posture using flexicurve and inclinometer methods in individuals with and without cervical spine dysfunction: A reliability and validity study. *Journal of Orthopaedic and Sports Physical Therapy*.

Blume, C.L, Wang, S.S, McSpadden, J., & McBride, B.N (2011). Reliability of ultrasound measurements of supraspinatus thickness at rest and during isometric contractions. *Journal of Orthopaedic and Sports Physical Therapy*.

Wang-Price, S., Csiza, L.A, Arnold, A.J, Mason, M.A, Flatt, S.P, Shield N., Jones, C.R., & Gibbons B.J (2011). Identification of postural stability deficit in individuals with chronic low back pain. *Journal of Orthopaedic and Sports Physical Therapy*.

Wang-Price, S., Garrison, E.M, Hamilton, C.M, Rodgers, L.A, & Gaillet, L.B (2010). Reliability of measurement of cervical multifidus muscle contraction using rehabilitative imaging. *Journal of Orthopaedic and Sports Physical Therapy*.

Boucher, A., Wang, S., Olason, S., & Trudelle-Jackson, E. (2009). Effectiveness of surface electromyographic biofeedback triggered neuromuscular electrical stimulation on knee rehabilitation. *Journal of Orthopaedic and Sports Therapy*.

Clubb, D., Wang, S., Trudelle-Jackson, E., Lovelace-Chandler, V., & Mitchell, K. (2009). Comparison of cervical spine manipulation and vibratory inhibition in patients with dysfunction of the cervical spine. *Journal of Orthopaedic and Sports Therapy*

Wang-Price, S.S, Fraiser, A.L, Farmer, M.E, & Waliany, N. (2008). Proprioception, posture, deep neck flexor muscle strength and endurance in patients with neck pain: validity and reliability of clinical measurements. *Journal of Orthopaedic and Sports Therapy*

Ratner, J., Wang, S., & Trudelle-Jackson, E. (2008). Outcomes of a high-velocity thrust manipulation on patients with sacroiliac joint hypomobility dysfunction. *Journal of Orthopaedic and Sports Therapy*.

Wang-Price, S., Havel, K., Russ, L., & Clubb, D. (2007). Inter-rater reliability of the cervical biomechanical examination for patients with neck pain between experienced manual therapists and physical therapy students. *Journal of Orthopaedic and Sports Therapy*.

Wang-Price, S., Barr, W., Bierman, D., Mercado, D., & Trudelle-Jackson, E. (2007). Do lower trapezius muscle strengthening exercises influence electromyographic activity of the upper and lower trapezius with non-specific neck pain. *Journal of Orthopaedic and Sports Therapy*.

Wang-Price, S., Trudelle-Jackson, E.J, Tossey, L.L, Vo, W.P, & Theriault, T.M (2006). Effectiveness of two physical therapy interventions for increasing length in the pectoralis minor muscle. *Journal of Orthopaedic and Sports Therapy*.

### **Invited Articles/Reviews**

Wang, S. (2011). Commentary for "Scapula and humeral movement patterns and their relationship with pain: a preliminary investigation". *International Journal of Therapy and Rehabilitation*, 18 (4), 219.

### **Presentations of Refereed Papers**

#### **International**

Molloy, G., Wang-Price, S., & Couchon, J. (2016, July). *Predictors of successful outcomes of hip manipulation for young adults with pain in groin, lateral hip or buttock*. IFOMPT World Conference, Glasgow, United Kingdom.

Brizzolara, K., Wang, S., & Roddey, T. (2012, October). *Comparison of the effect of pelvic compression on deep abdominal muscle thickness in persons with sacroiliac joint pain and healthy adults using ultrasound imaging*. 2012 IFOMPT World Congress, Quebec City, Canada-Quebec.

#### **National**

Alkhathami, K., Alshere, Y. M., Wang-Price, S., & Brizzolara, K. (2019). *Using the modified functional movement screen for assessment of movement impairments in young adults with low back pain*. American Pain Society Scientific Meeting, Milwaukee, Wisconsin.

Alkhathami, K. M., Alshere, Y. M., Wang-Price, S., & Brizzolara, K. (2019). *Use of modified functional movement screen scores for young adults with low back pain*. American Physical Therapy Association, Annual Conference & Expo, Chicago, Illinois.

Alshehre, Y. M., Alkhathami, K., Brizzolara, K., & Wang-Price, S. (2019). *Reliability and validity of the Y-balance test in young adults with chronic low back pain*. American Physical Therapy Association Annual Conference & Exposition, Chicago, Illinois.

Alshehre, Y. M., Alkhathami, K., Brizzolara, K., & Wang-Price, S. (2019). *Side differences in the Y-balance test performance in patients with unilateral low back pain*. American College of Sports Medicine Annual Meeting, Orlando, Florida.

Alshehre, Y. M., Alkhathami, K., Brizzolara, K., & Wang-Price, S. (2019). *Comparison of Y-balance test scores in young adults with and without chronic low back pain*. American Pain Society Scientific Meeting, Milwaukee, Wisconsin.

Swank, C., Almutairi, S., Wang-Price, S., Gao, F., Seeber, K., & Bednarz H. (2019). *Gait kinematics in people with incomplete spinal cord injury with a robotic exoskeleton*. American Physical Therapy Association Combined Sections Meeting, Washington DC, District of Columbia.

Swank, C., Almutairi, S., Wang-Price, S., Gao, F., Bednarz, H., & Seeber K. (2019). *Muscle activity during gait with a robotic exoskeleton in people with spinal cord injury*. American Physical Therapy Association Combined Sections Meeting, Washington DC, District of Columbia.

Almadan, M., Wang-Price, S., Ortiz, A., & Brizzolara, K. (2018). *Effects of lumbopelvic manipulation on neuromuscular activity of back and hip muscles in adults with chronic back pain*. American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.

Drummond, K., Wang-Price, S., & Lucido, M. (2018). *Manual therapy combined with vestibular exercises in treatment of a*



*patient with chronic cervicogenic dizziness induced after a massage.* American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.

Swank, C., Wang-Price, S., Gao, F., Almutairi, S., Bednarz, H., , Seeber K (2018). *Muscle activity during gait with a robotic exoskeleton in people with spinal cord injury.* American Physical Therapy Association Combined Sections Meeting, Washington, District of Columbia.

Swank, C., Almutairi, S., Wang-Price, S., Gao, F., Seeber, K., , Bednarz H (2018). *Gait kinematics in people with incomplete spinal cord injury with a robotic exoskeleton.* American Physical Therapy Association Combined Sections Annual Meeting, Washington, District of Columbia.

Swank, C., Wang-Price, S., Gao, F., & Almutairi, S. (2018). *Lower extremity kinematics during gait in healthy persons with and without a robotic exoskeleton.* American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.

Swank, C., Wang-Price, S., Gao, F., Almutairi, S., Morar, R., Signorelli A, Thakkar B. (2018). *Lower extremity kinematics during gait in healthy persons with and without a robotic exoskeleton.* American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.

Wang-Price, S., Zafereo, J., Brizzolara, K., Lawson, L., & Mackin, B. (2018). *Clinical assessments of muscle hypertonicity in adults with and without chronic intermittent neck-shoulder pain.* American Academy of Orthopedic Manual Physical Therapists Annual Conference, Reno, Nevada.

Wang-Price, S., Anderson, E., Zafereo, J., & Brizzolara, K. (2018). *Does tactile feedback increase lumbar multifidus muscle activation in asymptomatic healthy adults and patients with low back pain?* American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.

Connors, M., Wang-Price, S., Kelli, B., Swank, C., & Nichols, C. (2017, October). *Effectiveness of cervicothoracic junction manipulation versus placebo on shoulder muscle strength, electromyographic amplitude, and pain in participants with subacromial impingement syndrome.* American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, Salt Lake City, Utah.

Drummond, K., Wang-Price, S., & Lucido, M. (2017, October). *Manual therapy combined with vestibular exercises in treatment of a patient with chronic cervicogenic dizziness induced after a massage.* American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, Salt Lake City, Utah.

Wang-Price, S., Zafereo, J., Brizzolara, K., & Anderson, E. (2017, October). *Effects of tactile feedback on lumbar multifidus muscle activity in asymptomatic healthy adults and patients with low back pain.* American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, Salt Lake City, Utah.

Brizzolara, K., Wang-Price, S., & Zafereo, J. (2017, February). *Assessment of abdominal muscle thickness in post-partum women who have undergone cesarean sections as compared to vaginal births.* American Physical Therapy Association Combined Section Meeting, San Antonio, Texas.

Zafereo, J., Wang-Price, S., Roddey, T., & Brizzolara, K. (2017, February). *Regional manual therapy and motor control exercise for chronic low back pain: a randomized clinical trial.* American Physical Therapy Association Combined Section Meeting, San Antonio, Texas.

Molloy, G., Wang-Price, S., & Couchon, J. (2016, October). *Predictors of successful outcomes of hip manipulation for young adults with pain in groin, lateral hip or buttock.* American Academy of Orthopaedic Manual Physical Therapy Annual Conference, St. Louis, Missouri.

Wang-Price, S., Zafereo, J., Brizzolara, K., Sokolowski, L., & Turner, D. (2015, October). *Do three verbal instructions influence lumbar multifidus muscle thickness differently in both asymptomatic adults and patients with low back pain?* American Academy of Orthopaedic Manual Physical Therapy Annual Conference, Louisville, Kentucky.

Al Abbad, A., Wang-Price, S., Trudelle-Jackson, E., & Ortiz, A. (2015, February). *Immediate and carry-over effects of lumbopelvic manipulation on hip and knee electromyography amplitude and pain intensity in people with patellofemoral pain syndrome.* American Physical Therapy Association Combined Sections Meeting, Indianapolis, Indiana.

Blume, C., Wang-Price, S., Trudelle-Jackson, E., & Ortiz, A. (2015, February). *Effectiveness of concentric versus eccentric rotator cuff and scapular muscle progressive resistance exercises in adults with subacromial impingement syndrome.* American Physical Therapy Association Combined Sections Meeting, Indianapolis, Indiana.

Almadan, M. & Wang-Price, S. (2014, October). *Would lumbopelvic manipulation alter the fatigability of lumbar and hip muscles in a patient with intermittent non-specific chronic low back pain? A case study.* American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, San Antonio, Texas.

Brizzolara, K. J., Wang-Price, S., Roddey, T., & Medley, A. (2014, October). *A randomized clinical trial of the effectiveness of the compression belt for patients with sacroiliac joint pain*. American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, San Antonio, Texas.

McFarland, C., Wang-Price, S., Roddey, T., & Medley, A. (2014, February). *A comparison of clinical outcomes between early physical therapy intervention and usual care in individuals following anterior cervical fusion*. American Physical Therapy Association Combined Sections Meeting, Las Vegas, Nevada.

Zafereo, J., Devanna, R., Mulligan, E. P., & Wang-Price, S. (2014, February). *Hip stiffness patterns in lumbar flexion- or extension-based movement syndromes*. American Physical Therapy Association Combined Sections Meeting, Las Vegas, Nevada.

Zapata, K., Wang-Price, S., Sucato, D., Thompson, M., Trudelle-Jackson, E., & Lovelace-Chandler, V. (2014, February). *Effectiveness of spinal stabilization exercises for low back pain in adolescents with idiopathic scoliosis*. American Physical Therapy Association Combined Sections Meeting, Las Vegas, Nevada.

Al Abbad, A., Jones, L., Neal, L., & Wang, S. (2013, October). *A pilot study of hip and knee muscle electromyography amplitude during stepping task after a lumbopelvic manipulation*. American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, Cincinnati, Ohio.

Kunder, K. A., Wang, S. S., Sucato, D. J., & Dempsey-Robertson, M. (2012, February). *Comparison of multifidus muscle thickness in adolescents with and without idiopathic scoliosis using rehabilitative ultrasound*. American Physical Therapy Association Combined Sections Meeting, Chicago, Illinois.

Couch, Z. K. & Wang, S. S. (2011, October). *The effect of intramuscular manual therapy on multifidus contraction in a patient with lumbar radiculopathy: A case report*. American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, Anaheim, California.

Blume, C. L., Wang, S. S., McSpadden, J., & McBride, B. N. (2011, February). *Reliability of ultrasound measurements of supraspinatus thickness at rest and during isometric contractions*. American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.

McFarland, C. M., Wang, S. S., & Richard, S. L. (2011, February). *Clinical measurement of cervical posture using flexicurve and inclinometer methods in individuals with and without cervical spine dysfunction: A reliability and validity study*. American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.

Wang, S. S., Csiza, L., Arnold, A. J., Mason, M. A., Flatt, S. P., Shield, N., Jones, C.R., & Gibbons, B.J. (2011, February). *Identification of postural stability deficits in individuals with chronic low back pain*. American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.

Kearns, G. & Wang, S. S. (2010, October). *Medical diagnosis of cubital tunnel syndrome ameliorated with thrust manipulation of the elbow and carpals*. American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, San Antonio, Texas.

Wang, S. S., Garrison, E. M., Hamilton, C. M., Rodgers, L. A., & Gaillot, L. B. (2010, February). *Reliability of measurement of cervical multifidus muscle contraction using rehabilitative ultrasound imaging*. American Physical Therapy Association Combined Sections Meeting, San Diego, California.

Wang, S. S. & Ortiz, A. (2010, February). *Comparison of three electromyographic normalization methods for trapezius muscles during shoulder reaching*. American Physical Therapy Association Combined Sections Meeting, San Diego, California.

Ratner, J., Wang, S., & Trudelle-Jackson, E. (2008, February). *Outcomes of a high-velocity thrust manipulation on patients with sacroiliac joint hypomobility dysfunction*. American Physical Therapy Association Combined Sections Meeting, Nashville, Tennessee.

Wang, S. S., Fraise, A. L., Farmer, M. E., & Waliany, N. (2008, February). *Proprioception, posture, deep neck flexor muscle strength and endurance in patients with neck pain: validity and reliability of clinical measurements*. American Physical Therapy Association Combined Sections Meeting, Nashville, Tennessee.

Wang, S. S., Havel, K., Russ, L., & Clubb, D. (2007, February). *Inter-rater reliability of the cervical biomechanical examination for patients with neck pain between experienced manual therapists and physical therapy students*. American Physical Therapy Association Combined Sections Meeting, Boston, Massachusetts.

Wang, S. S., Barr, W., Bierman, D., Mercado, D., & Trudelle-Jackson, E. (2007, February). *Do lower trapezius muscle strengthening exercises influence electromyographic activity of the upper and lower trapezius in patients with non-specific neck pain*. American Physical Therapy Association Combined Sections Meeting, Boston, Massachusetts.

- Wang, S., Barr, W., Bierman, D., Mercado, D., & Trudelle-Jackson, E. (2006, October). *Do lower trapezius muscle strengthening exercises influence electromyographic activity of the upper and lower trapezius in patients with non-specific neck pain*. Texas Physical Therapy Association Annual Conference, Fort Worth, Texas.
- Wang, S., Havel, K., Russ, L., & Clubb, D. (2006, October). *Inter-rater reliability of the cervical biomechanical examination for patients with neck pain between experienced manual therapists and physical therapy students*. American Physical Therapy Association Combined Sections Meeting, Fort Worth, Texas.
- Wang, S. S., Trudelle-Jackson, E. J., Tossey, L. L., Vo, W. P., & Theriault, T. M. (2006, February). *Effectiveness of two physical therapy interventions for increasing length in the pectoralis minor muscle*. American Physical Therapy Association Combined Sections Meeting, San Diego, California.
- Abbott, J., Wang, S. S., & Smith, S. (2005, February). *Minimal Detectable change in grip strength measures in women following carpal tunnel release*. American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.
- Wang, S. S., Antony, J. A., English, M. A., Foster, C. L., & Harcourt, A. B. (2005, February). *Effectiveness of shoulder rehabilitative exercises on people with shoulder pain*. American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.
- Wang, S. S., Jenkins, L. M., Taylor, V. C., & Trudelle-Jackson, E. J. (2005, February). *Can physical therapy interventions improve muscle imbalance between the upper and lower trapezius? An electromyographic study*. American Physical Therapy Association Combined Sections Meeting, New Orleans, Louisiana.
- Wang, S. S., Foster, C., & Harcourt, A. (2004, June). *Gravity-minimized shoulder muscle strength tests in people with shoulder disorders*. American Physical Therapy Association, Annual Conference & Expo, Chicago, Illinois.
- Wang, S., Kotlyar, E., & Mitterer, G. M. (2004, February). *Reliability in hand-held dynamometric measurements of the middle and lower trapezius muscles in elderly people*. American Physical Therapy Association Combined Sections Meeting, Nashville, Tennessee.
- Wang, S. S., DeLlomas, J. S., & Mathews, C. D. (2003, February). *Can serratus anterior muscle strengthening exercises correct abnormal scapular winging? A case study*. American Physical Therapy Association Combined Sections Meeting, Tampa, Florida.
- Wang, S. S., Normile, S. O., & Lawshe, B. T. (2003, February). *A reliability study of new techniques to determine serratus anterior muscle strength and endurance*. American Physical Therapy Association Combined Sections Meeting, Tampa, Florida.
- Wang, S. S., Olson, S. L., Hanten, W. P., & Etnyre, B. R. (2001, February). *The effect of McConnell shoulder taping technique in people with anterior shoulder pain*. American Physical Therapy Association Combined Sections Meeting, San Antonio, Texas.
- Wang, S. S., Chen, W. Y., Olson, S. L., Etnyre, B. R., Valenzuela, F. T., & Hanten, W.P. (1998, June). *Correlation of the electromyographic recordings when using surface and fine-wire electrodes on the infraspinatus muscle in normal subjects*. American Physical Therapy Association Annual Conference & Exposition, Washington, District of Columbia.
- Wang, S. S., Olson, S. L., Chen, W. Y., Etnyre, B. R., & Hanten, W. P. (1998, June). *The effect of the McConnell shoulder taping technique on the infraspinatus muscle in normal subjects: A fine-wire electromyographic study*. American Physical Therapy Association Annual Conference & Exposition, Washington, District of Columbia.
- Hughes, K., Wang, S., Olson, S., & Hanten, W. (1997, June). *Reliability of integrated electromyography values of the upper and lower trapezius muscles in normals during glenohumeral elevation in the scapular plane*. American Physical Therapy Association, Annual Conference & Expo, San Diego, California.
- Wang, S., Hughes, K., Olson, S., & Hanten, W. (1997, June). *The effect of the McConnell shoulder taping technique in Normal subjects: An electromyographic study*. American Physical Therapy Association Annual Conference & Exposition, San Diego, California.
- Wang, S. S., Whitney, S. L., Burdett, R. G., & Janosky, J. E. (1991, February). *Lower extremity muscular flexibility in long distance runners*. American Physical Therapy Association Combined Sections Meeting, Orlando, Florida.

### **Regional**

- Murray, S., Taylor, D., & Wang-Price, S. (2016, April). *Which of the 1-step and 2-step gait initiation protocols is closer to normal barefoot walking? – Kinematic analysis*. South Central Regional American Society of Biomechanics Meeting, Dallas, Texas.

Taylor, D., Murray, S., & Wang-Price, S. (2016, April). *Which of the 1-step and 2-step gait initiation protocols is closer to normal barefoot walking? – Plantar pressure analysis*. South Central Regional American Society of Biomechanics Meeting, Dallas, Texas.

Connors, M., Wang-Price, S., Nichols, C., Littenberg, A., Austin, N., Canales J, Nwosu O. (2015, March). *Immediate and carry-over effects of cervicothoracic junction manipulation on shoulder strength and electromyography amplitude in asymptomatic adults*. South Central American Society of Biomechanics (SCASB) Regional Meeting, Fort Worth, Texas.

Stoddard, C., Dustin, M., Almadan, M., & Wang-Price, S. (2015, March). *Recovery of back and hip muscle fatigue after the Sorenson test in healthy adults*. South Central American Society of Biomechanics (SCASB) Regional Meeting, Fort Worth, Texas.

Stout, C., Tahamtan, K., & Wang-Price, S. (2015, March). *Three-dimensional kinematic analysis of gait during normal versus target walking*. South Central American Society of Biomechanics (SCASB) Regional Meeting, Fort Worth, Texas.

Al Abbad, A., Murrell, A., Watson, R., & Wang-Price, S. (2014, April). *Effects of lumbopelvic manipulation on hip and knee muscles electromyography amplitude and pain intensity in people with patellofemoral pain syndrome*. South Central Regional American Society of Biomechanics Meeting, Dallas, Texas.

Almadan, M. & Wang-Price, S. (2014, April). *The test-retest reliability of an electromyographic protocol for measuring median frequency of back and hip muscles in healthy adults and patients with chronic low back pain*. South Central Regional American Society of Biomechanics Meeting, Dallas, Texas.

Al Abbad, A., Jones, L., Neal, L., & Wang, S. (2013, April). *Reliability of hip and knee muscles electromyography amplitude during stepping task*. South Central Regional American Society of Biomechanics Meeting, Dallas, Texas.

### **State**

Connors, M., Wang-Price, S., Brizzolara, K., Swank, C., & Nichols, C. (2017, October). *Effectiveness of cervicothoracic junction manipulation versus placebo on shoulder muscle strength, electromyographic amplitude, and pain in participants with subacromial impingement syndrome*. Texas Physical Therapy Association Annual Meeting, Corpus Christi, Texas.

Zafereo, J., Wang-Price, S., Kelli, B., & Toni, R. (2015, October). *Regional manual therapy and motor control exercise for the management of chronic low back pain with hip and spine motion loss: A randomized clinical trial*. Texas Physical Therapy Association (TPTA), Arlington, Texas.

Blume, C. L., Wang-Price, S. S., Trudelle-Jackson, E., & Ortiz, A. (2014, October). *Effectiveness of concentric versus eccentric rotator cuff and scapular muscle progressive resistance exercises in adults with subacromial impingement syndrome*. Texas Physical Therapy Association Annual Conference, Galveston, Texas.

Brizzolara, K. J., Wang-Price, S., Roddey, T., & Medley, A. (2014, October). *Effectiveness of the addition of the compression belt to stabilization exercises for patients with sacroiliac joint pain: A randomized clinical trial*. Texas Physical Therapy Association Annual Conference, Galveston, Texas.

Connors, M., Wang-Price, S., Nichols, C., Littenberg, A., Austin, N., Canales, J., & Nwosu, O. (2014, October). *Immediate and carry-over effects of cervicothoracic junction manipulation on shoulder strength and electromyography amplitude in asymptomatic adults*. Texas Physical Therapy Association Annual Conference, Galveston, Texas.

Zafereo, J., Brown, J., Carson, E., & Wang, S. (2013, October). *Reliability of a skin surface device for assessing thoracolumbar spine mobility in subjects with chronic low back pain*. Texas Physical Therapy Association Annual Conference, Arlington, Texas.

Zapata, K., Wang-Price, S., Sucato, D., Thompson, M., Trudelle-Jackson, E., & Lovelace-Chandler, V. (2013, October). *Effectiveness of spinal stabilization exercises for low back pain in adolescents with idiopathic scoliosis*. Texas Physical Therapy Association Annual Conference, Arlington, Texas.

McFarland, C., Wang, S., Medley, A., & Roddey, T. (2013, September). *A comparison of clinical outcomes between early physical therapy intervention and usual care in individuals following anterior cervical fusion*. Texas Society of Allied Health Professions Annual Conference, San Marcus, Texas.

Blume, C., Wang, S., Al Abbad, A., Alexander, D., Dowdy, B., Harper, J., & Kaufman, H. (2012, October). *Comparison of supraspinatus muscle thickness changes in persons with subacromial impingement syndrome and asymptomatic adults*. Texas Physical Therapy Association Annual Conference, San Antonio, Texas.

McFarland, C. & Wang, S. S. (2012, September). *A comparison of clinical outcomes between early physical therapy intervention and usual care in individuals following anterior cervical fusion: A preliminary report*. Texas Society of Allied Health Professions: Annual Conference, San Antonio, Texas.

- Brizzolara, K., Wang, S., Roddey, T., Brown, D., Diebold, J., Licatino, L., & Minard, J. (2011, October). *Comparison of the effect of pelvic compression on deep abdominal muscle thickness in persons with sacroiliac joint pain and healthy adults using ultrasound imaging*. Texas Physical Therapy Association Annual Conference, The Woodlands, Texas.
- Kunder, K., Wang, S., Sucato, D., & Dempsey-Robertson, M. (2011, October). *Reliability of rehabilitative ultrasound imaging in adolescents with and without idiopathic scoliosis*. Texas Physical Therapy Association Annual Conference, The Woodlands, Texas.
- McFarland, C. M., Wang, S. S., & Richard, S. L. (2010, October). *Clinical measurement of cervical posture using flexicurve and inclinometer methods in individuals with and without cervical spine dysfunction: A reliability and validity study*. Texas Physical Therapy Association Annual Conference, Arlington, Texas.
- Wang, S. S., Csiza, L. A., Arnold, A. J., Mason, M. A., Flatt, S. P., & Shield, N. (2010, October). *Identification of postural stability deficits in individuals with chronic low back pain*. Texas Physical Therapy Association Annual Conference, Austin, Texas.
- Boucher, A. M. & Wang, S. (2005, October). *Effectiveness of Surface electromyographic biofeedback-triggered neuromuscular stimulation on knee rehabilitation: An outcome study*. Texas Physical Therapy Association Annual Conference, The Woodlands, Texas.
- Clubb, D. & Wang, S. S. (2005, October). *Reliability of cervical range of motion measurement using the dual bubble inclinometers and electronic digital inclinometer*. Texas Physical Therapy Association Annual Conference, The Woodlands, Texas.
- Wang, S. S., Tossey, L. L., Vo, W. P., Theriault, T. M., & Trudelle-Jackson, E. J. (2005, October). *Effectiveness of two physical therapy interventions for increasing length in the pectoralis minor muscle*. Texas Physical Therapy Association Annual Conference, The Woodlands, Texas.
- Abramov, D., Beardon, C., & Wang, S. S. (2004, October). *Relationship of the menstrual cycle to anterior cruciate ligament laxity as tested by the KT-1000 arthrometer*. Texas Physical Therapy Association Annual Conference, Austin, Texas.
- Wang, S. S., Jenkins, L. M., Taylor, V. C., & Trudelle-Jackson, E. J. (2004, October). *Can physical therapy interventions improve muscle balance between the upper and lower trapezius? An electromyographic study*. Texas Physical Therapy Association Annual Conference, Austin, Texas.
- Wang, S., Antony, J. A., & English, M. A. (2004, October). *Effectiveness of shoulder rehabilitation exercises on people with shoulder pain*. Texas Physical Therapy Association Annual Conference, Austin, Texas.
- Wang, S. S., Foster, C., & Harcourt, A. (2003, October). *A preliminary report of the effectiveness of shoulder rehabilitative exercises on people with shoulder pain*. Texas Physical Therapy Association Annual Conference, Austin, Texas.
- Wang, S. S., Kotlyar, E., & Mitterer, G. M. (2003, October). *Test-retest reliability in hand-held dynamometric measurements of the shoulder in elderly people*. Texas Physical Therapy Association Annual Conference, Austin, Texas.
- Wang, S. S., Normile, S. O., & Lawshe BT, B. T. (2002, October). *Measurement of serratus anterior muscle strength: A reliability study*. Texas Physical Therapy Association Annual Conference, Austin, Texas.
- Wang, S. S., DeLlomas, J. S., & Mathews, C. D. (2002, October). *Effectiveness of a serratus anterior muscle strengthening exercise program in correcting abnormal scapula winging: A case study*. Texas Physical Therapy Association Annual Conference, Austin, Texas.
- Wang, S. S., Olson, S. L., Hanten, W. P., & Etnyre, B. R. (2000, October). *The effect of McConnell shoulder taping technique in people with anterior shoulder pain*. Texas Physical Therapy Association Annual Conference, Austin, Texas.

## **Presentations of Non-Refereed Papers**

### **Local**

- Wang-Price, S. (2015, April). *Rehabilitation of lumbar multifidus muscles for low back pain – A clinical perspective*. Invited presentation at Texas Woman's University – Research Symposium: Building Research Collaboration, Dallas, Texas.
- Wang-Price, S. (2015, April). *Computer neck syndrome: Neck-shoulder pain and tightness*. Invited presentation at Texas Woman's University – Research Symposium: Building Research Collaboration, Dallas, Texas.
- Wang-Price, S. (2015, April). *TWU – Dallas, Motion Analysis Research Lab*. Invited presentation at Texas Woman's University – Research Symposium: Building Research Collaboration, Dallas, Texas.
- Wang-Price, S. (2017, January). *How to evaluate altered biomechanics of diabetic foot in clinical settings*. Invited presentation at Research Conference for the Mineral Metabolism Group, University of Texas Medical Center, Dallas, Texas.

## State

Wang-Price, S. (2016, December). *How to evaluate altered biomechanics after diabetic foot reconstruction*. Invited presentation at 2016 Texas Podiatric Medical Association, Diabetic Foot Update, San Antonio, Texas.

Wang-Price, S. (2016). *Changes of walking in diabetic neuropathy*. Invited presentation at 2016 Texas Podiatric Medical Association, Diabetic Foot Update, San Antonio, Texas.

## **Grants**

### Other

2013: Wang, S. TekScan InC., Regional Conference Grant, Principal Investigator, TekScan InC.,.

### Research

2018: Wang-Price, S. & Goh, H., Immediate and short-term effects of single-session repetitive transcranial magnetic stimulation on pain thresholds in patients with chronic low back pain – A pilot study, Principal Investigator, TWU REP.

2018: Wang-Price, S. Effects of Two Different dry-needling techniques on lumbar multifidus muscle activation and pressure pain threshold in patients with low back pain, Principal Investigator, Texas Woman's University Small Grant.

2017: Brizzolara, K., Wang-Price, S., & Zafereo, J., Predictive validity of lumbopelvic stress tests to determine those who will benefit from lumbar traction: A pilot study, Co-Investigator, Texas Woman's University REP.

2017: Alshehre, Y., Alkhatami, K., Wang-Price, S., & Brizzolara, K., Effects of spinal stabilization exercises on dynamic balance and functional performance in adults with subacute and chronic low back pain: A randomized clinical trial, Co-Principal Investigator, Texas Physical Therapy Foundation, Research Grant.

2016: Swank, C. & Wang-Price, S., Does wearing a robotic exoskeleton encouraging normal walking patterns in people after spinal cord injury?, Co-Investigator, Texas Woman's University REP.

2015: Hannon, J., Wang-Price, S., & Garrison, C., The Validity and Reliability of the Vail Sport Test™ as a Measure of Performance Following Anterior Cruciate Ligament Reconstruction. (Award Amount: \$3,045), Co-Investigator, Texas Physical Therapy Foundation, Research Grant.

2014: Connors, M., Wang-Price, S., & Nichols, C., Effectiveness of cervicothoracic junction manipulation versus placebo on shoulder muscle strength and electromyographic amplitude in patients with subacromial impingement syndrome (Award amount: \$1,500), Co-Investigator, Texas Society of Allied Health Professions, Research Grant.

2014: Wang-Price, S., Gao, F., & La Fontaine, J., Women with diabetic partial foot amputation: postural stability, dynamic gait stability, and fall risk factors, Co-Principal Investigator, Discovery Grant.

2014: Wang, S., Lavery, L. A., La Fontaine, J., Gao, F., & Ortiz, A. Kinematics, kinetics, electromyography and plantar pressure of patients with and without diabetic foot ulcers during walking and obstacle crossing. Re-submission., Principal Investigator, American Diabetic Association, Core Research Awards, Innovation Award.

2014: Connors, M., Wang-Price, S., & Nichols, C., Effectiveness of cervicothoracic junction manipulation versus placebo on shoulder muscle strength and electromyographic amplitude in patients with subacromial impingement syndrome (Award amount: \$3,611), Co-Investigator, Texas Physical Therapy Foundation, Research Grant.

2013: Wang, S., Lavery, L., Gao, F., & Alexis, O., Texas Woman's University, Research Enhanced Program Grant, Principal Investigator, Texas Woman's University, Research Enhanced Program Grant.

2013: Wang, S. American Society of Biomechanics, Regional Conference Grant, Principal Investigator, American Society of Biomechanics.

2013: Wang, S., Lavery, L. A., La Fontaine, J., Gao, F., & Ortiz, A. Kinematics, kinetics, electromyography and plantar pressure of patients with and without diabetic foot ulcers during walking and obstacle crossing., Principal Investigator, American Diabetic Association, Core Research Awards, Innovation Award.

2013: Zafereo, J. & Wang-Price, S., Regional manual therapy and motor control exercise for the management of chronic low back pain with hip and spine motion loss, Co-Principal Investigator, Texas Physical Therapy Foundation, Research Grant.

2012: Almadan, M. & Wang, S., Texas Physical Therapy Foundation, Research Grant, Co-Investigator.

2012: Kunder, K., Wang, S., & Sucato, D., Effectiveness of spinal stabilization exercises for low back pain in adolescents with idiopathic scoliosis. Awarded amount: 10,000. (Role: Mentor), Co-Investigator, American Physical Therapy Association, Section on Pediatrics, Mentored Research Award Grant.

2011: McFarland, C. & Wang, S., Texas Society of Allied Health Professions, Research Grant, Co-Investigator.

2011: Wang, S., Dempsey, M. E. , & Shelton, D. W., National Institute of Health, AREA (R15), Principal Investigator.  
2011: Brizzolara, K. & Wang, S., American Academy Orthopedic Manual Physical Therapy, OPTP Grant, Co-Investigator.  
2011: Al Abbad, A. & Wang, S., Texas Physical Therapy Foundation, Research Grant, Co-Investigator.  
2011: Blume, C. & Wang, S., Texas Physical Therapy Foundation, Research Grant, Co-Investigator.  
2011: Brizzolara, K., Wang, S., & Roddey, T., Texas Physical Therapy Foundation, Research Grant, Co-Investigator.  
2010: Brizzolara, K. & Wang, S., Texas Physical Therapy Foundation, Research Grant, Co-Investigator.  
2009: Blume, C. & Wang, S., Texas Physical Therapy Foundation, Research Grant, Co-Investigator.  
2009: Wang, S. TWU Research & Sponsored Programs, Small Grants Program, Principal Investigator.  
2009: Blume, C. & Wang, S., Orthopaedic Section, APTA, Clinical Research Grant, Co-Investigator.  
2009: Wang, S. TWU, Research Enhancement Program, Principal Investigator.  
2008: Carol, M. & Wang, S., Texas Physical Therapy Foundation, Research Grant, Co-Investigator.  
2008: Wang, S. TWU, Research & Sponsored Programs, Small Grants Program, Principal Investigator.  
2006: Boucher, A. & Wang, S., Texas Physical Therapy Foundation, Research Grant, Co-Investigator.  
2005: Boucher, A. & Wang, S., Texas Society of Allied Health Professions, Research Grant, Co-Investigator.  
2005: Clubb, D. & Wang, S., American Academy Orthopedic Manual Physical Therapy, Research Grant, Co-Investigator.  
2004: Boucher, A. & Wang, S., Orthopaedic Section, APTA, Clinical Research Grant, Co-Investigator.  
2002: Wang, S. Texas Physical Therapy Education and Research Foundation Grant, Principal Investigator.  
2001: Wang, S. TWU, Research Enhancement Program Grant, Principal Investigator.  
2001: Wang, S. TWU, Chancellor's Research Fellows Program, Principal Investigator.  
1998: Wang, S. & Olson, S., Texas Physical Therapy Education and Research Foundation Grant, Principal Investigator.

## **Papers Under Review**

McFarland, C., Wang-Price, S., Gordon, C., Danielson III, G. O., Crutchfield, J. S., Ann Medley Toni Roddey, (2019). "A comparison of clinical outcomes between early cervical spine stabilizer training and placebo in individuals following anterior cervical discectomy," Initial submission to --- *Petition removed* ---.

## **Working Papers**

Zafereo, J. & Wang-Price, S. (2018). "Differences in spinal posture and range of motion impairment in lumbar flexion- and extension-based movement syndromes," targeted for *Physiotherapy Theory and Practice: An International Journal of Physical Therapy*.

## **Service**

### **Service to the Institution**

#### **Department Assignments**

##### **Chair:**

2001 – 2018: Scholarship Committee  
2008 – 2012: PT Dallas Budget subcommittee  
2009 – 2010: Promotion and Tenure Committee  
2002 – 2003: Student Committee

##### **Coordinator/Director:**

2012 – 2018: Professional Studies  
2012 – 2018: Manual Therapy Lab  
2012 – 2018: Gait Motion Analysis Lab  
2007 – 2016: Orthopaedic Manual Therapy (OMT) Certificate Program (Co-ordinator)

##### **Member:**

2016-2017: Search Committee for Dallas Library

2004 – 2016: Post-professional Program Curriculum Committee

2013: Research Retreat Committee

2002 – 2004: University Library Liaison for School of Physical Therapy Dallas Presbyterian

### **College Assignments**

#### **Member:**

2014-2015 – 2017-2018: Holly Harvey Memorial Scholarship Committee

2014 – 2015: College of Health Sciences Award Committee

### **University Assignments**

#### **Chair:**

2015-2016 – 2017-2018: Institutional Review Board (IRB) Committee – Dallas, Chair

2012-2013 – 2014-2015: Institutional Review Board (IRB) Committee - Dallas, Co-Chair

#### **Member:**

2014 – 2015: Research Advisor Committee

2002 – 2012: Institutional Review Board (IRB) Committee - Dallas

2002 – 2012: Institutional Review Board (IRB) Committee

2007 – 2011: Research Support Committee

### **Service to the Profession**

#### **Chair: Committee / Task Force**

2017 – 2019: American Academy of Orthopaedic Physical Therapy (AAOMPT). Research Committee (Co-Chair)

2012 – 2018: Texas Physical Therapy Association (TPTA). Reserach Chair.

- Coordinate with the TPTA office staff to assign reviewers for submitted abstracts for research presentation at the TPTA AC
- Approve the final abstracts after review
- Coordinate judging process for the research presentations at the TPTA AC

2007 – 2018: Texas Physical Therapy Foundation. Vice President and Grant Chair:

- Coordinate the review process and review grant proposal
- Announce the award decisions
- Track status and outcomes of the funded research project
- Submit an annual report to the President and board members

#### **Chair: Conference / Track / Program**

2012 – 2013: South Central American Society of Biomechanics (SCASB) Regional Meeting. Organizing Committee

Member: 2012- Present. 2012 - 2013: Chair.

- Organized the conference.
- Applied for the Conference grant of the ASB.

#### **Member: Committee/Task Force**

2014 – 2017: American Academy of Orthopaedic Physical Therapy (AAOMPT). Reserach Committee.

- Attend Business meetings
- Plan and moderate reserach presentations for Annual Conference
- Judge poster and platform presentations at the Annual Conferences
- Review grant proposals

2011 – 2014: American Academy of Orthopaedic Physical Therapy (AAOMPT). Reserach Review Panel

- Judged poster and platform presentations at the AAOMPT Annual Conferences
- Reviewed grant applications
- Attended AAOMPT reserach committee meetings



2005 – 2007: Texas Physical Therapy Foundation. Member of Grant Review Committee

- Reviewed grant proposals
- Attended the annual meeting

#### **Officer of Organization or Association**

2010 – 2013: Texas Physical Therapy Association (TPTA). Nominating Committee Member.

- Identified eligible candidates for officer positions each year
- Organized elections at the annual conference

#### **Reviewer: Article / Manuscript**

2017 – 2018: Archives of Physical Medicine & Rehabilitation.

2014 – 2018: Physiotherapy Theory and Practice.

2013 – 2017: Journal of Orthopedic Physical Therapy.

2009 – 2015: International Journal of Therapy & Rehabilitation.

2010: American College of Occupational and Environmental Medicine (ACOEM)/APTA. External reviewer for the "Shoulder Guidelines" Chapter on behalf of APTA

2007 – 2009: Clinical Rehabilitation.

2007 – 2009: Disability and Rehabilitation.

2005 – 2006: Journal of Development & Rehabilitation.

#### **Reviewer: Conference Paper**

2009 – 2019: American Physical Therapy Association Combined Sections Meeting. Reviewer for abstracts submitted for the APTA combined Section Meeting (CSM) research presentation

2002 – 2018: Texas Physical Therapy Association (TPTA). Review abstracts submitted for research presentations at the TPTA AC

#### **Reviewer: Continuing Education Course**

1998 – 2018: Texas Physical Therapy Association (TPTA). Continued Education: Review 3-5 continued education course applications per months for applications in the Ortho, Sports and Research topics

### **Professional Development**

#### **Assurance of Learning - Professional Development**

2014: Dry Needling Institute, American Academy of Manipulative Therapy, Dallas, Texas.

2014: Dry Needling Institute, American Academy of Manipulative Therapy, Dallas, Texas.

2013: APTA Learning Center, Alexandria, Virginia.

2012: Academic Day / 19th Annual Vanderkooi Endowed Leadership, Dallas, Texas.

2010: North American Institute of Manual Therapy, Dallas, Texas.

2010: Neuro Orthopaedic Institute, Flower Mound, Texas.

2009: American Academy of Orthopaedic Manual Physical Therapy Annual Conference, Washington, District of Columbia.

2008: American Physical Therapy Association, Annual Conference & Expo, San Antonio, Texas.

2008: North American Institute of Manual Therapy, Berrien Spring, Michigan.

2008: North American Institute of Manual Therapy, Portland, Oregon.

2008: Combined Section Meeting of the American Physical Therapy Association, Nashville, Tennessee.

2008: North American Institute of Manual Therapy, Portland, Oregon.

2007: Combined Section Meeting of the American Physical Therapy Association, Boston, Massachusetts.

2006: North American Institute of Manual Therapy, Dallas, Texas.

2006: North American Institute of Manual Therapy, Dallas, Texas.

2006: American Physical Therapy Association, Education Section (Pre-conference Course), San Diego, California.

2006: North American Institute of Manual Therapy Symposium, Portland, Oregon.

2005: APTA, Combined Section Meeting, San Diego, California.  
2004: APTA, Combined Section Meeting, San Diego, California.  
2003: APTA, Combined Section Meeting, San Diego, California.  
2002: APTA, Combined Section Meeting, San Diego, California.

**Research-Related Conference/Seminar**

2018: 2018 TWU School of Physical Therapy – Dallas, Research Day, DALLAS, Texas.  
2018: American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, Reno, Nevada.  
2018: Combined Section Meeting of the American Physical Therapy Association, New Orleans, Louisiana.  
2017: Combined Section Meeting of the American Physical Therapy Association, San Antonio, Texas.  
2017: American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, Salt Lake City, Utah.  
2017: 2017 TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2016: American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, St. Louis, Missouri.  
2016: 2016 TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2015: Combined Section Meeting of the American Physical Therapy Association, Indianapolis, Indiana.  
2015: American Academy of Orthopaedic Manual Physical Therapy Annual Conference, Louisville, Kentucky.  
2015: 2015 TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2014: American Academy of Orthopaedic Manual Physical Therapy Annual Conference, San Antonio, Texas.  
2014: 2014 TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2014: 2013 TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2014: Texas Physical Therapy Association Annual Meeting, Galveston, Texas.  
2014: Combined Section Meeting of the American Physical Therapy Association, Las Vegas, Nevada.  
2013: Texas Physical Therapy Association Annual Conference, Arlington, Texas.  
2013: American Academy of Orthopaedic Manual Physical Therapy Annual Conference, Cincinnati, Ohio.  
2013: 37th Annual Meeting of the American Society of Biomechanics, Omaha, Nebraska.  
2013: South Central Regional American Society of Biomechanics Meeting, Dallas, Texas.  
2012: IFOMPT 2012 Rendezvous of Hands and Minds, Quebec City, Canada-Quebec.  
2012: South Central Regional American Society of Biomechanics, Dallas, Texas.  
2012: Texas Physical Therapy Association Annual Conference, San Antonio, Texas.  
2012: TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2011: American Academy of Orthopaedic Manual Physical Therapy Annual Conference, Anaheim, California.  
2011: Combined Section Meeting of the American Physical Therapy Association, New Orleans, Louisiana.  
2011: TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2010: American Academy of Orthopaedic Manual Physical Therapy, Annual Conference, San Antonio, Texas.  
2010: Combined Section Meeting of the American Physical Therapy Association, San Diego, California.  
2010: TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2010: Texas Physical Therapy Association Annual Conference, Arlington, Texas.  
2009: TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2008: TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2007: Orthopedic Section, APTA, Dallas, Texas.  
2007: TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2006: Combined Section Meeting of the American Physical Therapy Association, San Diego, California.  
2006: Texas Physical Therapy Association Annual Conference, Fort Worth, Texas.  
2006: TWU School of Physical Therapy – Dallas, Research Day, Dallas, Texas.  
2005: TPTA Annual Conference, Da, Texas.

2004: APTA Annual Conference in 2004, Chicago, Illinois.

2004: TPTA Annual Conference, Dallas, Texas.

2003: TPTA Annual Conference, Da, Texas.

2002: TPTA Annual Conference, Da, Texas.

## **Honors/Awards**

### **Award**

2015: , American Academy of Orthopaedic Manual Physical Therapy Annual Conference.

2009: Fellow, North American Institute of Orthopaedic Manual Therapy (NAIOMT).

2000: , Texas Physical Therapy Association Annual Conference.

### **Scholarship**

2009: Fellow, American Institute of Orthopaedic Manual Physical Therapy.