

# JO ARMOUR SMITH PhD, PT

## GENERAL INFORMATION

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ADDRESS: 29562 Silverado Canyon Road, Silverado, CA, 92676, USA  
TEL: (917) 583 1326 (CELL)  
E-MAIL: [josmith@chapman.edu](mailto:josmith@chapman.edu)/[joarmoursmith@gmail.com](mailto:joarmoursmith@gmail.com)

## EDUCATION

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2009 - 2014 **PhD Biokinesiology, University of Southern California**  
Advisor: Kornelia Kulig PhD, PT, FAPTA, Musculoskeletal Biomechanics Research Lab  
“Trunk neuromechanics during turning: a window into recurrent low back pain”

2009 - 2019 **Orthopaedic Clinical Specialist (ongoing emeritus status)**  
American Board of Physical Therapy Specialties certified

2005 - 2007 **Master of Manual Therapy**  
University of Western Australia: High Distinction

1998 - 2001 **BSc (Hons) Physiotherapy**  
University of London: First Class Honours

## ACADEMIC POSITIONS

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2022 - 2023 **Interim Director of DPT Research and Faculty Affairs**  
Department of Physical Therapy  
Crean College of Health and Behavioural Sciences, Chapman University, Irvine, CA

2022 - present **Associate professor (tenured)**  
Department of Physical Therapy  
Crean College of Health and Behavioural Sciences, Chapman University, Irvine, CA

2015 – 2022 **Assistant professor (tenure-track)**  
Department of Physical Therapy  
Crean College of Health and Behavioural Sciences, Chapman University, Irvine, CA

2015 - 2018 **Adjunct assistant professor of research**  
Division of Biokinesiology and Physical Therapy  
University of Southern California, Los Angeles, CA

2014 - 2015 **Post-doctoral fellow**  
Neuroplasticity and Imaging Laboratory, Division of Biokinesiology and Physical Therapy  
University of Southern California, Los Angeles, CA

2011 - 2013 **Adjunct faculty**  
Doctor of Physical Therapy program  
Mount St Mary's University, Los Angeles, CA

2009 - 2014 **Graduate teaching assistant**  
Division of Biokinesiology and Physical Therapy  
University of Southern California, Los Angeles, CA

## CLINICAL POSITIONS

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2004 - 2009 **Westside Dance Physical Therapy, New York, USA**

Senior physical therapist, Center Coordinator for Clinical Education: providing clinic and on-site therapy for the dancers of New York City Ballet, School of American Ballet and others, in addition to non-dancers

2001 - 2004

**Chelsea & Westminster Hospital NHS Trust, London, UK**

Junior and Senior II rotational physiotherapist (primarily orthopaedics)

#### **AWARDS/HONORS**

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2025	Supporting Open Access and Scholarship (SOARS) awardee, Leatherby Libraries, Chapman University
2024	Outstanding reviewer award, Journal of Sport and Health Science (Impact factor 9.7)
2023	Keynote Speaker, Biokinesiology Lab Coat Induction and Award Ceremony, Division of Biokinesiology and Physical Therapy, University of Southern California
2023	Keynote Speaker, Texas Women's University DPT Research Conference
2023	NIH Purpose Annual Meeting 2023 travel award
2023	Rebecca L. Craik Award for Excellence in Critical Inquiry, Keynote Speaker, Alvernia University
2021	Finalist, Mitchell Max Award for Research Excellence National Institutes of Health Pain Consortium
2020	Early Career Investigator Award in Biomechanics Research Section on Research (Biomechanics SIG), American Physical Therapy Association
2017	Margaret L. Moore Award for Outstanding New Academic Faculty Member American Physical Therapy Association
2014	Student Research Publication award California Physical Therapy Association
2014	Traveling Fellows Award, Section on Research American Physical Therapy Association
2014	Most Outstanding Poster, Jacquelin Perry Research Day USC Division of Biokinesiology and Physical Therapy
2012	Jacquelin Perry Scholarship, USC Division of Biokinesiology and Physical Therapy
2012	University of Florida Neuromuscular Plasticity Scholar
2011 & 2012	Winner, Exercise Science & Musculoskeletal Biomechanics category USC Ostrow School of Dentistry Research Day poster competition
2011	Invitee, Motor Control Summer School, International Society of Motor Control
2009	Florence P. Kendall Doctoral Scholarship, Foundation for Physical Therapy
2006	Elsevier Science Australia Prize, University of Western Australia, Perth
2001	EMS Student of the Year, Class of 2001, University of London/SGHMS, London

#### **IN PREPARATION/IN REVIEW EXTRAMURAL GRANT ACTIVITY**

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**Smith JA, Vendemia J, Silfies S (PI)**

Explaining the heterogeneity of symptoms in individuals with back pain: relationships between structural brain plasticity, symptom presentation, and sex.

2025: NICHD R03

Submitted Feb 2025

**Smith JA**, Silfies S, Vendemia J (Co-PIs)

Revealing the brain dynamics underlying the low back pain continuum.

2025: NIAMS R01

In preparation for submission October 2025

## **FUNDED EXTRAMURAL GRANT ACTIVITY**

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Harper B, **Smith JA** (Co-I)

Assessing the acute clinical effects of two different types of soft tissue mobilization techniques: compressive vs decompressive.

2023; \$3000 (funded), CardonRehab Research Grant

Bagwell J, Maher R, Peterson J, **Smith JA** (Consultant)

Pregnancy biomechanics and muscle activation.

2019; \$39,994 (funded), Academy of Orthopaedic Physical Therapy

**Smith JA** (PI)

The influence of postural behaviour and brain organization on progression of back pain symptoms in young adults.

2018; \$632,309 (funded), NICHD K01 Mentored Research Scientist Development Award

Derian J, **Smith JA** & Kulig K (Consultant)

Effect of instruction on performance of side-lying lumbar manipulation.

2018; \$3000 (funded), Cardon Rehabilitation Grant, California Orthopedic Manual Physical Therapy Special Interest Group

Derian J, **Smith JA**, Kulig K, O'Donnell M (Co-PI)

Biomechanical characterization of side-lying lumbar spine manipulation among novice and student practitioners.

2016; \$2,990 (funded), Cardon Rehabilitation Grant, California Orthopedic Manual Physical Therapy Special Interest Group

Bagwell J, **Smith JA**, Peterson J (Co-I)

Lower extremity joint loading and trunk and muscle activation adaptations during gait in pregnant, post-partum and control participants.

2015; \$15,000 (funded), New Investigator Award, Orthopaedic Section of the American Physical Therapy Association

**Smith JA** & Fisher BE (Co-PI)

Do changes in primary motor cortex representation underlie impairments in anticipatory postural adjustments in older adults with a history of falls?

2015; \$10,000 (funded), California Physical Therapy Research Fund

O'Donnell M, **Smith JA**, Kulig K, Abzug A (Co-I)

How should we teach lumbar manipulation? A consensus study and biomechanical assessment of operator dynamics during side-lying lumbar manipulation.

2013; \$2985 (funded), Cardon Rehabilitation Grant, California Orthopedic Manual Physical Therapy Special Interest Group

**Smith JA** (PI)

Trunk neuromechanics during turning: window into recurrent low back pain.

2013; \$2000 (funded), Student Grant-In-Aid award, American Society of Biomechanics

**Smith JA** (PI)

Trunk coordination in persons with low back pain.

2012; \$10,983 (funded), New Investigator Award, Orthopaedic Section of the American Physical Therapy Association

**Smith J** (PI)

Physiotherapy exercise programmes: are verbal instructions sufficient?

## NON-FUNDED EXTRAMURAL GRANT ACTIVITY

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### **Smith JA, Harper B (Co-PIs) & Tain R**

Does the direction of force matter? Imaging the microcirculatory response to compressive and decompressive force-based manipulations applied to spinal myofascial tissues.

2024; \$75,000 Pilot award, ForceNET research network, NINDS/NCCIH U24AT011969

LOI accepted and approved for full proposal submission May 2024, full proposal submitted October 2024

### **Smith JA, Harper B (Co-PIs) & Tain R**

Does the direction of force matter? Imaging the muscle metabolism response to compressive and decompressive force-based manipulations applied to spinal myofascial tissues.

2023; \$50,000 Flex Award, SPINEWORK research network, NCCIH U24 AT011978 (funding program was paused after submission of letter of interest)

### **Smith JA (PI), Tain R**

Muscle Metabolism in Individuals with Low Back Pain

2023; \$1,964,325 NIAMS Stephen I. Katz Early-Stage Investigator R01

### **Smith JA & Fisher BE (Co-PI)**

Ageing with Successful Postural and Neural Adaptations: the AGE-Span study

2020; \$963,718 NIA R01

### **Smith JA & Fisher BE (Co-PI)**

What's velocity got to do with it? Central mechanisms underlying the effects of high- and low-velocity joint mobilization.

2017; \$275,000 NCCIH R21

### **Fisher BE and Smith JA (Co-I)**

Modulating the brain with a common musculoskeletal intervention: central mechanisms underlying the effects of high-velocity ankle joint mobilization.

2017; \$40,000 Foundation Research Grant, Foundation for Physical Therapy

### **Smith JA (PI)**

Mechanical and psychological influences on recurrence of symptoms in young adults with low back pain: a prospective study.

2017; \$19,600 Early Career Research Grant, International Association for the Study of Pain

### **Smith JA & Beneck GJ (PI)**

The influence of paraspinal muscle fatigue on postural control of the trunk/pelvis complex in asymptomatic young adults with recurrent low back pain.

2016; \$46,159 Young Investigator Grant, North American Spine Society

## FUNDED INTRAMURAL AND STUDENT GRANT ACTIVITY AND AWARDS

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### **Smith JA**

The influence of postural behaviour and brain organization on progression of back pain symptoms in young adults.

2021; \$2700, Crean College Pandemic Excellence Fund

### **Normandin D & Smith JA (faculty mentor)**

Brain activity during walking in a virtual reality environment

2020; \$933, Crean College Graduate Student Scholarly Activity Grant

### **Frederick D, Glynn L, Pincus D, Gruenewald T, Boehm J, Bostean G, Smith JA, Jenkins B, Berardi V, Moors A, Robinette J, Douglas J (Co-I)**

Identifying risk and promoting resilience in the midst of the COVID-19 pandemic

2020; \$15,000 COVID-19 Rapid Research Award, Kay Family Foundation

Kish R, **Smith JA**

Performing Arts Medicine Association International Symposium 2018  
2018; \$10,000, On-Campus Conference/Workshop Award, Chapman University

Tsai R & **Smith JA** (faculty mentor)

Rotation-related impairments in breakers with and without low back pain and contributing factors  
2017; \$600, Chapman University Graduate Student Research Grant  
2018; winner, Crean College of Health and Behavioral Sciences Outstanding Poster Awards

Russo R, Santayana N & **Smith JA** (faculty mentor)

Factors associated with low back pain in young adults: a prospective study  
2017; \$1,300, Chapman University Graduate Student Research Grant

**PUBLICATIONS IN SUBMISSION (underlined font denotes first, corresponding, or senior author,  
\* denotes Chapman student researcher)**

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- 1) Pallante P, Hooyman A, Sanchez N, Sigward S, Beisham-Ryan E, **Smith JA**, Farrokhi S. The Association between Pain sensitivity, Pain Catastrophizing, and Fear Avoidance beliefs in Injured Runners. In submission, Pain.
- 2) Berns R, **Smith JA**, Sanchez N, Jeffcoat N, Sigward S, Hooyman A, Farrokhi S. Comparison of Running Participation Limitations, Injury Location, and Training Characteristics Between Young and Master Runners. In submission, Physical Therapy in Sport.
- 3) Yung E, Wong M, **Smith JA**, Hooyman A, Cossin J, Yates S, Siedentopp T, Farrokhi S. Post-spinal mobilization conditioned pain modulation predicts 4-week perceived recovery in chronic neck pain: a prospective cohort study. In submission, The Spine Journal.
- 4) **Smith JA**, Tain R, Sharp KG, Glynn LM, Van Dillen LR, Jacobs JV, Cramer SC. Abnormalities in sensorimotor circuit function are related to chronicity of low back pain. In submission, Neurology.
- 5) Harper B, Shiraishi, M, **Smith JA**, Soangra R. The influence of perception of fear on dynamic postural control in those with chronic ankle instability. In submission, Clinical Rehabilitation.
- 6) Harper B, Shiraishi M, **Smith JA**, Soangra R. Innovative smartphone application for assessing postural control and gait in athletes cleared to return to play after concussion. In submission, Physical Therapy in Sport.
- 7) Mais S, Pomrantz A, Reischl S, **Smith JA**, Soangra R. The influence of subtalar joint positioning on midfoot dynamics: empirical support for the midfoot locking mechanism. In submission, Journal of Foot and Ankle Research
- 8) Teng S-L, **Smith JA**. Stride-to-stride inter-joint coordination variability decreases during dual-task running. In revision, Sports Biomechanics
- 9) Teng S-L, **Smith JA**, Wu WW. Dual-task effects on spatiotemporal, kinematic, and kinetic parameters and their variability during running. In revision, Gait & Posture
- 10) Gehrig T, Berk L, Dudley R, **Smith JA**, Gharivband L, Lohman E. The Association of Acute Stress and Lower Quarter EMG During a Single Leg Balance Dexterity Task. In revision, Gait & Posture

**PEER REVIEWED PUBLICATIONS (underlined font denotes first, corresponding, or senior author,  
\* denotes Chapman student researcher)**

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- 1) **Smith JA**, Tain R, Chrisman I, Sharp KG, Glynn LM, Van Dillen LR, Jacobs JV, Cramer SC. Gray matter morphology and pain-related disability in young adults with low back pain. In press, NeuroImage.
- 2) Gehrig T, Berk L, Dudley R, **Smith JA**, Gharivband L, Lohman E. The feigned annoyance and frustration test to activate the sympathoadrenal medullary system. In press, Comprehensive Psychoneuroendocrinology.
- 3) Bagwell J, Avila E, Reynolds N, **Smith JA**, Valenzuela K, Katsavelis D. Running biomechanics differ during and after pregnancy compared to females who have never been pregnant. In press Gait and Posture.
- 4) Shaw J\*, Jacobs JV, Van Dillen LR, Beneck GJ, **Smith JA**. Understanding the Biering-Sorensen test: contributors to extensor endurance in young adults with and without low back pain. Journal of Electromyography and Kinesiology. 2024; 74: 102854.

- 5) Harper B, **Smith JA**. Combining static and dynamic dry cupping therapy to improve local and regional symptoms in individuals with low back pain: a case series. In press, International Journal of Sports Physical Therapy.
- 6) Soangra R, **Smith JA**, Rajagopal S, Yedavalli SVR, Anirudh ER. Classifying unstable and stable walking patterns using electroencephalography signals and machine learning algorithms. *Sensors*. 2023; 23(13): 6005.
- 7) **Smith JA**, Tain R, Sharp KG, Glynn LM, Van Dillen LR, Henslee K\*, Jacobs JV, Cramer SC. Identifying the neural correlates of anticipatory postural control: a novel fMRI paradigm. *Human Brain Mapping*. 2023; 44(10): 4088-4100. <http://doi.org/10.1002/hbm.26332>
- 8) Lee S-P, Farrokhi S, Kent J, Ciccotelli J, Chien L-C, **Smith JA**. Comparison of clinical and biomechanical characteristics between individuals with lower limb amputation with and without lower back pain: a systematic review and meta-analysis. *Clinical Biomechanics*. 2022; 101: 105860
- 9) **Smith JA**, Mais S. The effect of spinal muscle fatigue and psychosocial factors on pressure pain threshold in healthy adults. *Pain Research and Management*, 2023; 2023: 7336477.
- 10) Bagwell J, **Smith JA**, Walaszek M, Runez H, Lam K, Peterson J, Katsavelis D. An exploratory analysis of gait biomechanics and muscle activation in pregnant females with high and low scores for low back pain or pelvic girdle pain during and after pregnancy. *Clinical Biomechanics*. 2022; 97: 105705
- 11) **Smith JA**, Stabbert H\*, Bagwell J, Teng H-L, Wade V\*, Lee S-P. Do people with low back pain walk differently? A systematic review and meta-analysis. *Journal of Sport and Health Science*. 2022; 11(4): 450-465.
- 12) Rohafza M, Soangra R, **Smith JA**, Ignasiak NK. Self-paced treadmills do not allow for valid observation of linear and non-linear gait variability outcomes in patients with Parkinson's disease. *Gait & Posture*. 2022; 91: 35-41.
- 13) Strzelinski M, Brody L, **Smith JA**, Bronner S. Reliability of a barre-mounted dynamometer-stabilizing device in measuring dance-specific muscle performance. *Medical Problems of Performing Artists*. 2021; 36 (1): 27–33.
- 14) **Smith JA**, Eiteman-Pang, WK\*, Soangra R, Ignasiak NK. Adaptations in trunk-pelvic coordination variability in response to fatiguing exercise, *Gait & Posture*. 2021; 84: 1–7.
- 15) **Smith JA**, Russo L\*, Santayana N\*. Fear avoidance predicts persistent pain in young adults with low back pain: a prospective study. *Journal of Orthopedic and Sports Physical Therapy*. 2021; 51(8): 383-391.
- 16) Bagwell JJ, Reynolds N, Walaszek M, Runez H, Lam K, **Smith JA**, Katsavelis D. Lower extremity kinetics and muscle activation during gait are significantly different during and after pregnancy compared to nulliparous females. *Gait & Posture*. 2020; 81: 33–40.
- 17) Derian JM, **Smith JA**, Wang Y, Lam W, Kulig K. Biomechanical characteristics of lumbar manipulation performed by expert, resident and student physical therapists. *Musculoskeletal Science and Practice*. 2020; 48: doi.org/10.1016/j.msksp.2020.102150.
- 18) Shih Y, Fisher BE, **Smith JA**, Powers CM. Corticomotor excitability of gluteus maximus is associated with hip biomechanics during a single-leg drop-jump. *Journal of Motor Behavior*. 2021; 53 (1): 40–46.
- 19) **Smith JA**, Ignasiak NK, Jacobs JV. Task invariance and reliability of anticipatory postural adjustments in healthy young adults. *Gait & Posture*. 2020; 76: 396-402.
- 20) Lee S-P, Dinglasan V, Duong A, Totten R, **Smith JA**. Individuals with recurrent low back pain exhibit significant changes in paraspinal muscle strength after intramuscular fine wire electrode insertion. *PM&R*. 2020; 12 (8): 775–782.
- 21) Rowley KM, **Smith JA**, Kulig K. Reduced trunk coupling in persons with recurrent low back pain is associated with greater deep-to-superficial trunk muscle activation ratios during the Balance-Dexterity Task. *Journal of Orthopaedic and Sports Physical Therapy*. 2019; 49 (12): 887-898.
- 22) **Smith JA**, Fisher BE. Anticipatory postural adjustments and spatial organization of motor cortex – evidence of adaptive compensations in healthy older adults. *Journal of Neurophysiology*. 2018; 120: 2796-2805.
- 23) **Smith JA**, Hawkins A, Beuttler R, Grant-Beuttler M, Lee S-P. Risk factors associated with low back pain in golfers: a systematic review and meta-analysis. *Sports Health*. 2018; doi.org/10.1177/1941738118795425.
- 24) Lee S-P, **Smith JA**, Kimber M, Houk K. Insertion and presence of fine-wire intramuscular electrodes to the lumbar paraspinal muscles do not affect muscle performance and activation during high-exertion spinal extension activities. *PM&R*. 2018; 10 (11): 1192-1197.

- 25) Lee S-P, Bailey JP, **Smith JA**, Barton S, Brown D, Joyce T. Adaptations of lumbar biomechanics after a four-week running training with minimalist footwear: implications for running-related lower back pain. *Physical Therapy in Sport*. 2018; 29: 101-107.
- 26) **Smith JA**, Gordon J, Kulig K. The influence of divided attention on walking turns: effects on gait control in young adults with and without a history of low back pain. *Gait and Posture*. 2017; 58:498-503.
- 27) **Smith JA**, Albishi A, Babikian S, Asavasopon S, Fisher BE, Kutch J. The motor cortical representation of a muscle is not homogeneous in brain connectivity. *Experimental Brain Research*. 2017; 235 (9): 2767-2776.
- 28) **Smith JA**, Kulig K. Trunk-pelvis coordination during turning: a cross-sectional study of young adults with and without a history of low back pain. *Clinical Biomechanics*. 2016; 36: 58-64.
- 29) Fisher BE, Piraino A, Lee YY, **Smith JA**, Johnson S, Davenport TE, Kulig K. The effect of velocity of joint mobilization on corticospinal excitability in individuals with a history of ankle sprain. *Journal of Orthopaedic and Sports Physical Therapy*. 2016; 46 (7): 562-570.
- 30) O'Donnell M, **Smith JA**, Abzug A, Kulig K. How should we teach lumbar manipulation? A consensus study. *Manual Therapy*. 2016; 25: 1-10.
- 31) **Smith JA**, Kulig K. Altered multifidus recruitment during walking in young asymptomatic individuals with a history of low back pain. *Journal of Orthopaedic and Sports Physical Therapy*. 2016; 46 (50): 356-374.
- 32) **Smith JA**, Kulig K. Does insertion of intramuscular electromyographic electrodes alter motor behavior during locomotion? *Journal of Electromyography and Kinesiology*. 2015; 25: 431-437.
- 33) Sutton-Traina K, **Smith JA**, Jarvis DN, Kulig K. Exploring active and passive contributors to turnout in dancers and non-dancers. *Medical Problems of Performing Artists*. 2015; June: 78-83.
- 34) Jarvis DN, **Smith JA**, Kulig K. Trunk coordination in dancers and non-dancers. *Journal of Applied Biomechanics*. 2014; 30 (4): 547-554.
- 35) **Smith JA**, Tuchman A, Huoh M, Kaiser AM, Schooler W, Hsieh PC. Locomotor biomechanics after total sacrectomy. *Spine*. 2014; 39 (24): E1481-E1487.
- 36) **Smith JA**, Popovich JM Jr, Kulig K. The influence of hip strength on lower limb, pelvis and trunk kinematics during walking and hopping in healthy women. *Journal of Orthopaedic and Sports Physical Therapy*. 2014; 44 (7): 525-531.
- 37) **Smith JA**, Siemienski A, Popovich JM Jr, Kulig K. Intra-task variability of trunk coordination during a rate-controlled bipedal dance jump. *Journal of Sports Sciences*. 2012; 30 (2):139-147.
- 38) **Smith J**. Moving beyond the neutral spine: stabilizing the dancer in lumbar extension. *Journal of Dance Medicine and Science*. 2009; 13 (3): 73-83.
- 39) Hartog M, **Smith J**, Zujko A. Acetabular labral tears in the dancer: a literature review. *Journal of Dance Medicine and Science*. 2006; 10 (1-2): 51-56.
- 40) **Smith J**, Lewis J, Prichard D. Physiotherapy exercise programmes: are instructional exercise sheets effective? *Physiotherapy Theory and Practice*. 2005; 21 (2): 93-102.

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#### PEER-REVIEWED CONFERENCE ABSTRACTS (\* denotes Chapman student researcher)

- 1) **Smith JA**, Sanchez N, Jeffcoat S, Ferreira N\*, Sigward S, Farrokhi S. Differences in running related injury rates and training habits between young and masters runners. APTA Combined Sections Meeting, Houston, USA, 2025 (poster)
- 2) Farrokhi S, Beisheim-Ryan E, Sanchez N, Jeffcoat S, Ferreira N\*, Sigward S, **Smith JA**. The association between pain sensitivity, fear avoidance, and pain catastrophizing in runners. APTA Combined Sections Meeting, Houston, USA, 2025 (poster)
- 3) **Smith JA**, Borlovan GB\*, Leigh J\*, Jacobs JV, Van Dillen LR. Predictors of longitudinal symptom trajectory in young adults with back pain. APTA Combined Sections Meeting, Houston, USA, 2025 (poster)
- 4) Harper B, **Smith JA**. Measuring acute influences of two soft tissue interventions. California Physical Therapy Association annual conference, San Francisco, CA, USA, 2024 (poster).
- 5) **Smith JA**, Chrisman I\*, Tain R, Sharp KG, Glynn LM, Van Dillen LR, Jacobs JV, Cramer SC. Structural sensorimotor adaptations in young adults with low back pain. Neuroscience, Washington DC, USA, 2023 (poster).
- 6) Berns R\*, Fountain T\*, Van Dillen LR, Jacobs JV, **Smith JA**. Postural control in young adults with and without recurrent back pain: influence of symptom characteristics. APTA Combined Sections Meeting, Boston, USA, 2024 (platform)

- 7) **Smith JA**, Tain R, Nguyen T\*, Glyn LM, Sharp KG, Van Dillen LR, Jacobs JV, Cramer SC. Altered sensorimotor processing during the active straight leg raise test in individuals with back pain. APTA Combined Sections Meeting, Boston, USA, 2024 (poster)
- 8) Teng H-L, Maeda N, Collins S, Lane BG, Chuman RY, Jamil S, Castaldo S, **Smith JA**. Effects of dual task and running speed on inter-joint coordination variability during running. APTA Combined Sections Meeting, Boston, USA, 2024 (platform)
- 9) **Smith JA**, Fountain TJ\*, Danan CD\*, Hewlett S\*, Hurtado Y\*, Paz Guerrero A\*, Sitiso N\*. Motor control in individuals with low back during walking turns: stratification by symptom severity. APTA Combined Sections Meeting, San Diego, USA, 2023 (poster)
- 10) Derian JM, **Smith JA**, Kulig K. Biomechanical characteristics of physical therapists performing lumbar spine manipulation. North American Spine Society Annual Conference. 2022 (E-poster)
- 11) **Smith JA**, Tain R, Sharp KG, Glynn LM, Van Dillen LR, Henslee K\*, Jacobs JV, Cramer SC. Identifying the neural correlates of postural control: a novel fMRI paradigm. Organization for Human Brain Mapping Annual Meeting, 2022 (poster)
- 12) Tain R, Ellingson BM, Guzman CR, Stark C, Sharp KG, **Smith JA**. Assessment of brain activity during a lower extremity sensorimotor task using CEST MRI at 3T. International Society for Magnetic Resonance in Imaging Annual Meeting, 2022 (digital poster)
- 13) Stabbert H\*, **Smith JA**. Maintaining physical activity during COVID-19: the influence of psychosocial variables in individuals with back pain. American Psychosomatic Medicine Annual Meeting, Long Beach, USA, 2022. Psychosomatic Medicine, 2022; 84 (5): A75-A75.
- 14) Shaw J\*, Matsumae M\*, Moazzam M\*, **Smith JA**. The influence of fatigue on muscle coactivation in young adults with/without persistent low back pain. APTA Combined Sections Meeting, San Antonio, USA, 2022 (poster)
- 15) **Smith JA**, Truong S\*. Extensor fatigability in young adults: the influence of multiple exercise repetitions. APTA Combined Sections Meeting, San Antonio, USA, 2022 (poster)
- 16) **Smith JA**, Moazzam M\*, To S, Fisher BE. Association of motor cortical representation and hip muscle activation during gait initiation in older adults. Neural Control of Movement Society, Annual Meeting, Virtual, 2021 (poster)
- 17) Rohafza M, **Smith JA**, Soangra R, Ignasiak N. Preliminary investigation of cortical activity during stabilized and destabilized gait. Neural Control of Movement Society, Annual Meeting, Virtual, 2021 (poster)
- 18) Russo L\*, Santayana N\*, **Smith JA**. Factors associated with low back pain in young adults: a prospective study. APTA Combined Sections Meeting, Denver, USA, 2020 (poster)
- 19) Mais Requejo S, Cabrales M\*, Aubrey J\*, Benitez Rodil JA\*, Tam J\*, Vinh JB\*, Le TV\*, Guirguis A\*, **Smith JA**. The effect of spinal muscle fatigue and psychosocial factors on pain pressure threshold. APTA Combined Sections Meeting, Denver, USA, 2020 (poster)
- 20) Eiteman-Pang WK\*, Sharif A, **Smith JA**. Adaptations in pelvis trunk coupling variability in response to fatiguing exercise. International Society of Biomechanics/American Society of Biomechanics, 2019 (poster)
- 21) Shih Y, **Smith JA**, Powers CM. The relationship between corticomotor excitability of gluteus maximus and the hip extensor moment during a single-leg drop jump. International Society of Biomechanics/American Society of Biomechanics, 2019 (presentation)
- 22) Rowley KM, **Smith JA**, Kulig K. Trunk control in persons with recurrent low back pain during dynamic balance. International Society of Biomechanics/American Society of Biomechanics, 2019 (presentation)
- 23) Derian JM, **Smith JA**, Wang Y, Lam W, Kulig K. Biomechanical characteristics of lumbar spine manipulation in expert, resident, and student therapists. Combined Sections Meeting, 2019 (podium)
- 24) **Smith JA**, Sias J\*, Wong L\*, Guirguis A\*. Is the rapid arm raise task a reliable measure of anticipatory postural adjustments? Combined Sections Meeting, 2019 (poster)
- 25) Tsai R\*, **Smith JA**. Low back pain in breakers: A preliminary study of prevalence and behavioral factors. Regional meeting, International Association of Dance Medicine and Science, 2018 (podium)
- 26) Shih Y, **Smith JA**, Powers CM, Fisher BE. Variability of motor evoked potentials in gluteus maximus and vastus lateralis during transcranial magnetic stimulation. Combined Sections Meeting, 2018 (poster)
- 27) **Smith JA**, Darmon Y, Fisher BE. Changes in postural strategies in healthy older adults during mediolateral perturbations. Combined Sections Meeting, 2018 (poster)

- 28) Lee S-P, Dinglansan V, Duong A, Totten R, **Smith JA**. Individuals with recurrent low back pain exhibit reduced paraspinal muscle strength after intramuscular fine-wire EMG electrode insertion to lumbar multifidus. Combined Sections Meeting, 2018 (platform)
- 29) Albishi A, **Smith JA**, Fisher BE, Kutch J. The motor cortical representation of a muscle is not homogeneous in brain connectivity. Neuroscience 2017 (poster)
- 30) **Smith JA**, Albishi A, Ahmed N\*, Fisher BE. Is functional organization of the motor cortex associated with timing of anticipatory postural adjustments in healthy young and older adults? Neuroscience 2017 (poster)
- 31) Seid K\*, Cannon L\*, McCoy K\*, McKinney B\*, Choi J, **Smith JA**. Is there a correlation between the strength of gluteus medius and dynamic balance? California Physical Therapy Association annual conference, 2017 (poster)
- 32) **Smith JA**, Albishi A, Fisher BE. Is functional organization of the motor cortex associated with timing of anticipatory postural adjustments in healthy adults? APTA Combined Sections Meeting, 2017 (poster)
- 33) Albishi A, **Smith JA**, Fisher BE, Kutch J. Adjacent motor cortical areas have distinct resting state brain functional connectivity. Neuroscience 2016, San Diego, USA (poster)
- 34) **Smith JA**, Ahmed N\*, Kulig K. An inverted pendulum model of center of mass control during turning. American Society of Biomechanics Annual Conference, North Carolina, USA. 2016 (poster)
- 35) Derian JM, **Smith JA**, O'Donnell M, Abzug A, Kulig K. Expert and Novice Clinicians Performing Side-lying Lumbar Manipulation: what are the Differences in Movement Dynamics? IFOMPT Conference, Glasgow, Scotland 2016 (poster)
- 36) O'Donnell M, **Smith JA**, Abzug A, Derian J, Kulig K. How should we teach lumbar manipulation? A consensus study. IFOMPT Conference, Glasgow, Scotland, 2016 (poster)
- 37) O'Donnell M, **Smith JA**, Abzug A, Derian J, Kulig K. How should we teach lumbar manipulation? A consensus study. APTA Combined Sections Meeting, Anaheim, USA, 2016 (poster)
- 38) Derian J, O'Donnell M, **Smith JA**, Abzug A, Kulig K. Ground reaction force profiles during side-lying lumbar manipulation: comparison of expert and novice manual therapists. APTA Combined Sections Meeting, Anaheim, USA, 2016 (poster)
- 39) Albishi A, **Smith JA**, Fisher BE. Methodological study to identify trunk and hip muscle representation in motor cortex. Neuroscience 2015, Chicago, USA (poster)
- 40) **Smith JA**, Kulig K. Do kinematic impairments persist between symptomatic episodes in young adults with persistent low back pain? APTA Combined Sections Meeting, Indianapolis, USA, 2015 (podium)
- 41) **Smith JA**, Kulig K. Evidence for control of center of mass during walking turns. World Congress of Biomechanics, Boston, USA, 2014 (poster)
- 42) **Smith JA**, Kulig K. Paraspinal activity during locomotor perturbations with varying mechanical demands: a window into recurrent low back pain. APTA Combined Sections Meeting, Las Vegas, USA, 2014 (podium)
- 43) **Smith JA**, Kulig K. Does insertion of intramuscular EMG electrodes affect kinematics during locomotion? APTA Combined Sections Meeting, Las Vegas, USA, 2014 (poster)
- 44) **Smith JA**, Kulig K. Modulation of trunk kinematics in response to changing task constraints in young adults with a history of low back pain and healthy controls. American Society of Biomechanics Annual Conference, Nebraska, USA, 2013 (podium)
- 45) **Smith JA**, Kulig K. The effect of divided attention on axial plane trunk kinematics during locomotion in healthy young adults and persons with a history of recurrent low back pain. 2nd Joint World Congress of ISPGP and Gait and Mental Function, Akita, Japan, 2013 (poster)
- 46) Jarvis DN, **Smith JA**, Kulig K. Coordination variability is higher in non-dancers than in dancers during a jumping task. National Athletic Trainers' Association Annual Meeting, Las Vegas, NV, 2013 (podium)
- 47) **Smith JA**, Gordon J, Kulig K. Inter-segmental coordination variability during locomotion – do different analytical approaches tell the same story? American Society of Biomechanics Annual Conference, Florida, USA, 2012 (poster)
- 48) **Smith JA**, Beneck GJ, Kulig K. Maladaptive neuroplasticity in recurrent low back pain: a neuromechanical study. University of Florida Annual Neuromuscular Plasticity Symposium, Gainesville, USA, 2012 (poster)
- 49) **Smith JA**, Beneck GJ, Kulig K. Neuromuscular control and kinematics in people with recurrent low back pain during anticipated walking turns. APTA Combined Sections Meeting, Chicago, USA, 2012 (poster)
- 50) **Smith JA**, Beneck GJ, Kulig K. Anticipated walking turns in people with recurrent low back pain: a kinematic study. American Society of Biomechanics Annual Conference, Long Beach, USA, 2011 (poster)

- 51) Sutton K, **Smith JA**, Jarvis DN, Oki K, Lee S-P, Kulig K. The relationship between long bone morphology, dance history and turnout: an exploratory study. International Society for Dance Medicine and Science Annual Meeting, Washington, USA, 2010 (podium)
- 52) **Smith JA**, Siemienski A, Popovich JM Jr, Kulig K. Trunk segment coordination during a jumping task in elite dancers: an exploration using vector coding. American Society of Biomechanics Annual Conference, Rhode Island, USA, 2010 (poster)
- 53) **Smith JA**, Popovich JM Jr, Kulig K. Sagittal plane spinal kinematics during sautes. International Association for Dance Medicine and Science Annual Meeting, Birmingham UK, 2010 (podium)
- 54) **Smith J**. Spinal motor control and the performing artist. Performing Artists Medicine Association Annual Symposium, Colorado, USA, 2009 (podium)
- 55) **Smith, J**. Spinal extensor dysfunction in the dancer: a review. International Association for Dance Medicine and Science Annual Meeting, Cleveland, USA, 2009 (podium)

## INVITED PRESENTATIONS

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1. **Smith JA**. Low back pain and young adults: an opportunity for early intervention. Webinar Wednesday, California Physical Therapy Association, 2024.
2. **Smith JA**. Applied spinal biomechanics and low back pain. Department of Physical Therapy, Movement and Rehabilitation Sciences, Northeastern University, 2024.
3. **Smith JA**, Cramer SC, Jacobs JV, Tain R, Sharp KG, Van Dillen LR, Glynn LM. The influence of postural behavior and brain organization on progression of back pain symptoms in young adults: a prospective longitudinal study. 16<sup>th</sup> Annual Symposium on Advances in Pain Research. NIH Pain Consortium, 2021.
  - Finalist for the Mitchell Max Award for Research Excellence
4. Nelson-Wong EJ, Callaghan J, Gombatto S, **Smith JA**. Spine biomechanics from lab to clinic: What we've learned and where to go from here. APTA Combined Sections Meeting, 2021
5. **Smith JA**. Biomechanics and back pain: what can kinematics tell us? American College of Sports Medicine Meeting (Southwest Chapter), Newport Beach, USA, 2019
6. Beneck G, **Smith JA**. Motor control of the spine in acute, recurrent and chronic low back pain: impairments, adaptations and clinical applications. APTA Combined Sections Meeting, Las Vegas, USA, 2014
7. **Smith JA**, Kulig K, Traina K. Dancers, runners, jumpers – same diagnoses, similar presentations – unique interventions? APTA Combined Sections Meeting, San Diego, USA, 2013

## MEDIA

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1. Interview with *The Guardian* newspaper discussing Tiger Woods and back pain: <https://www.theguardian.com/sport/2018/sep/28/tiger-woods-back-ryder-cup-usa>
2. Interview with the American Academy of Orthopaedic Manual Physical Therapists research podcast, September 2020
3. Interview with the *Doctors of Physical Therapy UnCut* podcast September 2022: Back Pain and Neuroscience

## OTHER PUBLICATIONS

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- 1) Molnar M, Bornstein R, Hartog M, Henry L, Rodriguez M, **Smith J**, Zujko A. Foot and ankle injuries in the dancer: Examination and treatment strategies. *Independent Study Guide 18.3: Dance Medicine: Strategies for the Prevention and Care of Injuries to Dancers*, Orthopaedic Section, APTA, 2008

## TEACHING EXPERIENCE

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2015 - present      **Chapman University, Department of Physical Therapy**  
 Full-time faculty: *PT 511 Biomechanics of Human Movement lecture and lab*  
                               *PT 512 Kinesiology lecture and lab*  
                               *PT 650 Scientific Inquiry*  
                               *PT 643 Motor Control/Motor Learning lab*  
                               *PT 752/3 Scientific Inquiry (mentored research experience)*

2011 - 2013	<b>Mount St Mary's University, DPT Program</b> Adjunct faculty: <i>PT 402 Biomechanics</i>
2009 - 2015	<b>University of Southern California, Division of Biokinesiology and Physical Therapy</b> Adjunct faculty/Graduate teaching assistant: <i>PT 630 Integrated Management of the Upper and Lower Extremities</i> <i>PT 631 Integrated Management of the Axial Skeletal System and Related Movement Disorders</i>
2008 - 2009	<b>Certificate in Dance Rehabilitation</b> 4 module continuing education interdisciplinary program presented by Westside Dance Physical Therapy
2006 - 2009	<b>APTA Credentialed Clinical Instructor</b> Supervision of student physical therapists during final clinical affiliations (out-patient musculoskeletal)

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## ACADEMIC MENTORING

PhD/Masters Qualifying and Dissertation committee member and PhD examiner

- 1) Michael Rowley, University of Southern California. "*The role of conscious control of movement during dynamic balance: Investigating healthy systems and those affected by recurrent low back pain*" (PhD Biokinesiology, 2018)
- 2) Melissa Strzelinski, Rocky Mountain University of Health Professions. "*The influence of hip pain on muscle performance in dancers*" (PhD Health Sciences 2018)
- 3) Yo Shih, University of Southern California. "*The association among measures of cortical excitability and lower extremity motor behavior*" (PhD Biokinesiology, 2019)
- 4) Alaa Albishi, University of Southern California. "*Are there neuroanatomical and functional substrates associated with differential representation of a single muscle?*" (PhD qualifying committee)
- 5) Michael Pollind, Chapman University. "*Development and validation of wearable systems for human postural sway analysis*" (MS, Computational Science, 2019)
- 6) Ted Gehrig, Loma Linda University. "*Influence of acute stress on postural control of the trunk*" (PhD Physical Therapy, 2024)
- 7) Samantha Lynn-Quinn, Wits University (South Africa). "*The predictors of back injury in elite golfers*" (PhD Health Sciences), PhD examiner

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## PROFESSIONAL AFFILIATIONS AND LICENSURE

2001 - present	Chartered Society of Physiotherapy
2004 - present	American Physical Therapy Association <i>Orthopaedic, Research and Education Sections, California Chapter</i>
2009 - present	American Society of Biomechanics
2008 - present	International Association for Dance Medicine and Science
2011 - present	International Society for Motor Control
2011 - present	International Society for Posture and Gait Research
2016 - present	Society for Neuroscience
2016 - present	Organization for Human Brain Mapping
2019 - present	Society for the Neural Control of Movement

CA and NY state licensed physical therapist

## PROFESSIONAL SERVICE

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2021 - present	Board member, Cal-PT FUND
2023 - present	Career Awards Committee, Biomechanics SIG, Academy of Physical Therapy Research
2013 - present	Member of the Research Council, California Physical Therapy Association <i>Conference abstract review: CPTA annual conference</i> <i>Grant review: Cal-PT award</i>
2023	Federal grant review, Ad hoc reviewer, Loan Repayment Program
2022	Federal grant review, Ad hoc reviewer; NIH Center for Scientific Review
2020	Federal grant review, Ad hoc reviewer (Motor Function, Speech and Rehabilitation Study Section; Early Career Reviewer program)
2014 - 2018	Member of the Research Committee, Orthopaedic Section of the American Physical Therapy Association <i>Conference abstract review: Combined Sections Meeting of the APTA</i> <i>Grant/Award review: Small grant program, Orthopaedic Section</i> <i>Rose Excellence in Research Award</i> <i>JOSPT publication award</i>
2019 - 2023	Member of the Nominating Committee (Chair 2022 – 2023), Academy of Physical Therapy Research, American Physical Therapy Association
Ad-hoc journal reviewer:	
Journal of Sports Sciences	
Journal of Electromyography and Kinesiology	
Journal of Orthopaedic and Sports Physical Therapy	
Journal of Applied Biomechanics	
Clinical Biomechanics	
Journal of Dance Medicine and Science	
Scientific Reports	
Cerebral Cortex	
Physical Therapy	
British Journal of Sports Medicine	

## ACADEMIC SERVICE (CHAPMAN UNIVERSITY)

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### Department of Physical Therapy

2015 - present	Research committee (chair from 2023 onwards)
2015 - present	Eight faculty search committees (one as co-chair, four as chair)
2019 – 2023	Chair's Leadership Advisory council
2019 - 2024	Resource Allocation committee
2023 - 2024	Curriculum committee
2024	CAPTE reaccreditation task force

### Crean College of Health and Behavioral Sciences

2022 - present	Faculty review committee
2017 - present	Three faculty search committees (Department of Psychology, Marriage and Family Therapy program, Brain Institute)

2016 - 2020	Dean's advisory committee
2020	Ad-hoc committee to review tenure and promotion guidelines
2022	Ad-hoc committee to review promotion guidelines for clinical faculty
2023	Ad-hoc committee for reappointment of Crean College Dean
Chapman University	
2021 - present	Institutional Review Board committee member
2016	Grant review: Undergraduate research/scholarly activity awards
2016	Faculty "Master Class" lecture, Chapman University Homecoming Celebration
2016	Musculoskeletal wellness screening, College of Performing Arts students
2018	Faculty Opportunity Fund grant review
2019	Grant review: Undergraduate research/scholarly activity awards
2020	Research Task Force Subcommittee for human subjects
2021	Grant review: Undergraduate research/scholarly activity awards
2021	Sustainability committee
2022	Faculty master class, Parent Spring Summit