



Newsletter – Issue 1: August 2017

Editorial

Most established professions have programs to train their future leaders. Whether it be MBA programs in business, or officer training in the military, few professions would prefer to leave development of their future leaders to chance. But that is the current situation in chiropractic research globally. There are few, if any, opportunities to help ensure that our best and brightest trainees will succeed once they begin their research careers.

As a result, the three of us began talking about how to solve this leadership gap. Jon Adams suggested developing an international chiropractic research leadership program modelled after the Oxford International Research Leadership Programme run via University of Oxford. From this example of leadership training, we envisioned a similar initiative to identify, nurture, and support emerging researchers whose research is relevant to chiropractic. The program's ultimate goal is to create a sustainable research culture and ultimately a greater academic critical mass in the profession.

With the help of generous funding from the World Federation of Chiropractic, the European Centre for Chiropractic Research Excellence, the Canadian Chiropractic Association, and the Nordic Institute of Chiropractic and Clinical Biomechanics, we were able to announce the program and call for applications in 2016. The response to our call revealed an international wealth of potential early career talent looking for such an opportunity to develop their careers further. After applications closed, we agreed on a slate of candidates for personal interviews to evaluate their research interests and future plans. From the interviews, 13 candidates were chosen as fellows in the first cohort of the Chiropractic Academy for Research Leadership, or CARL for short. The CARL Fellows, who are all early career researchers engaged in PhD programs or within a few years after acquiring their PhD, come from 7 countries on 4 continents and represent diverse areas of interests all of high relevance for the chiropractic profession.

With our first cohort in place and eager to begin, we held the inaugural CARL residential at the University of Southern Denmark campus in Odense, Denmark in April of 2017. The 4-day program was packed with guest lectures from successful young researchers, experienced research leaders in the musculoskeletal field, and experts on management and leadership as well as many workshops and social activities (cycling to/from meetings each day rain or shine!). The energy and enthusiasm was overwhelming, and during the week, strong professional bonds and friendships were formed. Through all of this, an impressive range of collaborations and co-authored papers were initiated that will provide a solid base of scientific enquiry that will develop the chiropractic field over the next few years.

Building on the success of the Denmark residential, the next CARL residential will be held in April 2018 in Edmonton, Canada. Following the residential, CARL and the CARL fellows will be featured at the Canadian Chiropractic Association 2018 National Convention.

As such, we are happy and proud to present this first issue of the CARL Newsletter. Actually, it is the CARL Fellows who will each be taking a turn coordinating this newsletter. Here, you can meet the fellows, read about their accomplishments, and learn more about the many CARL collaborative projects focused on both research and leadership. Without CARL, these projects might not have launched and all within a few months of the first residential.

We hope you can see the CARL program is off to a great start. Still, we need to focus on continuing our early success by raising additional funds to continue this world-first program. We hope the newsletter will keep you up to date about CARL activities and inspire you to support CARL and the mentoring of our future leaders on the world stage.

Greetings,
Jon Adams, Greg Kawchuk, and Jan Hartvigsen



Highlights from the CARL Fellows

Alex Breen

A great deal of my time so far this year has been dedicated to the collection and analysis of spine kinematics using Quantitative Fluoroscopy (QF) as well as training and supervising research assistants and PhD candidates to take this work forward. QF is currently being used to measure the motion of individual lumbar vertebrae as participants move through standardized bending protocols.



This is being applied to:

- Aiding the diagnosis of persons with 'chronic non-specific low back pain' which in these cases are considered to be mechanical in nature,
- Determining reference limits of intervertebral kinematics within an asymptomatic population
- Investigating the effects of micro gravity on spinal kinematics and disc health in collaboration with King's College London using QF in conjunction with MR Imaging.

Outside of the lab, I have been helping to create collaborative ties between the Anglo-European College of Chiropractic (AECC) where I am based and Bournemouth University, Exeter University and Cardiff University. This June I was appointed a Visiting Associate with Bournemouth University's faculty of Health and Social Science and have furthered my skills beyond the field of biomechanics by attending a course for running Randomized Control Trials at Keele University, UK.



Diana De Carvalho

This past semester I presented an online webinar for the Centre of Research Expertise for the Prevention of Musculoskeletal Disorders (CRE-MSD) entitled, "Sitting at Work: Is it really killing you? And what you can do to survive..." and redesigned and taught a 3rd year Human Factors and Ergonomics course for the School of Human Kinetics and Recreation at Memorial University. Two of my master's students will be presenting work exploring the effect of sitting on active spine range of motion (flexion) and the relationship of transient sitting-induced pain with biomechanical and qualitative factors at the American Society of Biomechanics Conference in Denver, Colorado this August 8-11th. This past

June I was honoured to be awarded the Chiropractor of the Year by the Newfoundland and Labrador Chiropractic Association.

Katie de Luca

In May I was appointed the Research Chair of Sports Chiropractic Australia to increase the output of sports chiropractic research, and provide clear directives to foster research in this area. Additionally I have acquired an Honorary Postdoctoral Research Fellow position at the University of Sydney. I have had three papers accepted for publication: two which were awarded prizes at the recent World Federation of Chiropractic Biennial Conference in Washington DC.

**Andreas Eklund**

One highlight is Iben Axén winning the Jean Robert research prize at the European Chiropractors' Union convention in Limassol Cyprus 2017, for our project "Prevention of low back pain: effect of chiropractic maintenance care as compared to symptomatic treatment – a pragmatic randomised clinical trial". The other collaborators are Irene Jensen, Malin Lohela-Karlsson, Jan Hagberg, Lennart Bodin, Charlotte Lebouf-Yde, Alice Kongsted and Iben Axén. During the autumn, I will mainly be devoted to three projects concerning secondary analyses of the data from the RCT on chiropractic maintenance care. These projects will be focusing on psychological sub-grouping, trajectories and cost-effectiveness.

Matthew Fernandez

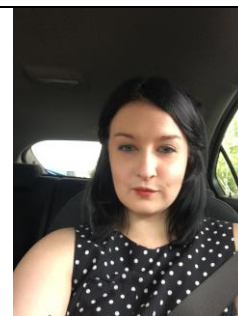
I officially completed and was awarded my PhD soon after returning from CARL in May this year. My graduation is scheduled for September this year. The highlight for me was winning best overall poster at the recent WFC Biennial Conference in Washington, which included CARL mentor Professor Jan Hartvigsen. Currently I am preparing two conference presentations for the CAA (State and National conference) as well as leading two CARL projects. I am also hopeful of completing two additional projects left over from my PhD in the near future.

**Martha Funabashi**

Since the CARL residential, I have been working on two jobs: started my Research Associate position and is still the SafetyNET lead study coordinator. I will lead the CARL website, and am in the process of bringing Football Fitness Program to Canada as well as creating a practice based research network (PBRN) for physiotherapists in Alberta, Canada. Highlights include winning the New Investigator award at the World Federation of Chiropractic (WFC) 14th Biennial Congress / 24th Association for Chiropractic Colleges Research Agenda Conference (ACC-RAC) / 2017 National Chiropractic Leadership Conference of the American Chiropractic Association (ACA-NCLC), Washington DC, USA, 2017 and the University of Alberta Postdoctoral Fellows Association Spring Travel Award 2017.

Michelle Holmes

Since the CARL residential, I have been working on two projects. I have continued working on my PhD and have completed my transfer from MPhil to PhD student. I have also recently started a part-time job as a senior research assistant evaluating an intervention to get people who are unemployed because of their chronic pain, back into employment. I have presented at two conferences: the World Congress on Integrative Medicine (Berlin), and the Complementary and Alternative Medicine Strategy for Research and Development (CAMSTRAND) (Southampton). I am also a co-applicant on a grant with Dr Felicity Bishop and others at Southampton, looking at helping patients with low back pain make treatment decisions (to be submitted September 2017).



**Melker Johansson**

Attended a conference in Varese, Italy on occupational health and cardiovascular disease (International Committee Occupational Health – Cardiovascular Disease) where I presented my PhD project on objectively measured sitting time and risk factors for cardiometabolic disease. I am currently busy with data processing to get objectively measured physical activity data ready for analysis. Additionally, I am participating in a course in compositional data analysis. Finally, I am collaborating on an interesting systematic review on the prevalence and pattern of co-occurring musculoskeletal pain among people with low back pain.

Craig Moore

Podium and poster presentations at WFC2017 in Washington DC was a big highlight this year. In July, I won the 3-minute (3MT) Thesis competition at the University of Technology.

I have submitted my second PhD manuscript and I am hard at work on the drafts of the next 2 papers. Some publication success of late with 2 papers external to my PhD that were recently accepted by *Spine* and the journal *Headache*.



I enjoyed interviewing Jan Hartvigsen for the CAA magazine to help promote both CARL and Jan as a speaker at the upcoming CAA national conference. A busy time for me as we go into Australian conference season. I'm organising the national conference research symposium and many of the conference speakers as well as the CAA state conference program for New South Wales.

**Isabelle Pagé**

Since the end of the first residential in Denmark, I have been very busy. I officially started my last PhD-related study involving the recruitment of 100 patients with chronic thoracic pain. As an advanced PhD student, my supervisor mandated I manage a short project with a chiropractic student performing a summer internship in our research laboratory. The data are already collected and we hope to submit a paper before the end of August. With other CARL fellows, I am also currently working on a number of project involving first and secondary analyses of datasets.

Apart from CARL, I am a collaborator on the Observatoire Chiropratique (Chiropractic Observatory, www.uqtr.ca/ocdc) of the Université du Québec à Trois-Rivières chiropractic department. My main mandate is to write short reports summarizing relevant scientific papers for chiropractors. Finally, last May, I was pleased to receive a 2017-2018 PhD scholarship from the Fondation Chiropratique du Québec (Quebec Chiropractic Foundation) valuing \$20K CAD.

Katie Pohlman

Since our residency, I have been working on quite a few manuscripts with two currently in submission, one with feedback from peer reviewers at *Trials* and another still in review with *NEJM*. Other manuscripts include two manuscripts awarded with Clinical and Educational Research recognitions at DC2017.

I am also pleased to share that my PhD data collection has been successfully completed and recruitment goal met. My plan is to defend in Winter 2018. Along with being a part of several CARL projects, Melker Johansson and I have nominated a senior chiropractic researcher for the Giles Medal for Research Excellence award.



Outside of CARL, I am working to build collaborative relationships and research opportunities throughout the Dallas-Fort Worth Metroplex, including potential collaborations with University of Texas – Southwestern and University of North Texas Health Science University.



Mike Swain

Along with CARL fellow Katie de Luca and CARL mentor Distinguished Professor Jon Adams, we were pleased to receive first place at the FICS Research Symposium for our project entitled *Characteristics of Australian chiropractors treating athletes: Results from a practice based research network*. The manuscript is currently in review.

I have been participating as a member of the Conference Organizing Committee for the CA/COCA National Conference: “The Modern Practice: How to make it happen” that will be held in Melbourne in October 2017.

The conference has a number of outstanding speakers, including CARL mentor Professor Jan Hartvigsen. Of note for Researchers’ in the Field is the Researcher’s Day held on the 13th October, which is the pinnacle scientific leadership forum for Australian chiropractic researchers. It provides an opportunity for participants to showcase their recent research work.

Arnold Wong

Apart from leading a CARL paper, entitled “Does lower limb joint pain increase the risk of low back pain in older women?”, I am conducting two research projects: (1) conducting a meta-synthesis on the topic of life experience in older people with low back pain, and (2) developing a novel approach to quantify fatty infiltration in paraspinal muscle. I currently have five manuscripts under review and am finalizing two manuscripts for submission.




Following the first CARL residential in April 2017, I attended the International Society for the Study of the Lumbar Spine in Athens (June 2017) where I gave one oral presentation, one special poster presentation and two general poster presentations. To improve the understanding of neurophysiological changes and low back pain, Dr. Dino Samartzis (The University of Hong Kong), Dr. Inna Belfer (University of Pittsburgh) and I are serving as guest associate editors for a special theme issue on neurophysiological changes and low back pain in *Frontiers in Neuroscience*, *Frontiers in Psychology*, *Frontiers in Neurology*, and *Frontiers in Systems Neuroscience*. <http://journal.frontiersin.org/researchtopic/6298/neurophysiological-changes-and-low-back-pain>

On June 30, I was humbled to receive a research grant (approximately 123,000 USD) from the Hong Kong government to investigate low back pain and paraspinal muscle changes.



Last day of the CARL Residential in Odense, Denmark, April 2017.

 Asger Torning, NIKKB Communications).

Ongoing CARL Projects

Associations between individual characteristics and spinal stiffness: a combined analysis of multiple datasets

The objective of this study is to compare individuals' characteristics, such as anthropometrics and age, and spinal stiffness, measured by different spinal stiffness testing devices in three or four separate cross-sectional studies.

Lead: Isabelle Pagé

Working group members: Greg Kawchuk, Arnold Wong, Martha Funabashi, Diana De Carvalho, Alexander Breen, Michael Swain

Australian Chiropractic Research Network (ACORN) rural data analyses

There is a paucity of empirical data that describes the differences in demand or characteristics between chiropractors serving in urban and rural Australian communities. The aim of the current project is to report the prevalence and describe the clinical management characteristics of chiropractors practicing in urban and rural areas of Australia using a large nationally representative sample of Australian chiropractors.

Lead: Katie de Luca

Working group members: Mike Swain, Isabelle Pagé, Martha Funabashi, Arnold Wong, Jon Adams

Center of rotation study

Biomechanical testing to investigate the influence of the center of rotation location on the forces experienced by the lumbar spine. We found an error in the data previously collected, which will be discarded. Therefore, we decided to take a step back and approach it by conducting a systematic review on lumbar center of rotation (COR) locations and based on the results of this review, re-design the COR experiment. I will lead both projects and will start developing the systematic review protocol soon.

Lead: Martha Funabashi

Working group members: Diana De Carvalho, Alex Breen, Isabelle Pagé, Greg Kawchuk

Challenges and lessons for recruitment within chiropractic studies

An analysis of recruitment and retention data from three studies, a narrative discussion on challenges of recruitment and potential suggestions for future studies.

Lead: Michelle Holmes

Working group members: Alex Breen, Martha Funabashi, Katie Pohlman, Isabelle Pagé

Common mechanical themes among persons referred for Objective Spine Motion Imaging Assessment

A retrospective analysis of existing spinal kinematic data from the AECC's Quantitative Fluoroscopy database will be used to determine common mechanical themes among persons referred for Objective Spine Motion Imaging Assessment (OSMIA). Data collection is well under way with motion data from 52 participants collated.

Lead: Alex Breen

Working group members: Andreas Eklund, Isabelle Pagé, Martha Funabashi, Matt Fernandez, Greg Kawchuk, Diana De Carvalho

Does lower limb joint pain increase the risk of low back pain in older women?

This study will use the Australian longitudinal study on women's health data to explore whether the presence of lower limb joint pain is associated with a higher prevalence and severity of low back pain. The outline of the manuscript will be prepared in July.

Lead: Arnold Wong

Working group members: Katie de Luca, Andreas Eklund, Jan Hartvigsen, Jon Adams, Isabelle, Matt Fernandez, Lynn Parkinson

Does psychological profile, pain intensity and self-rated health modify the association between expectations and the short-term subjective improvement in patients with low back pain? A longitudinal multicenter trial

The objectives of the study are to investigate if patient expectations predict short-term subjective improvement of recurrent and persistent low back pain and to explore whether psychological profile, pain intensity and self-rated health modify the relationship between expectations and outcome. An outline and initial analytical plan have been written; data analysis will begin in August 2017.

Lead: Andreas Eklund

Working group members: Diana De Carvalho, Isabelle Pagé, Arnold Wong, Melker Johansson, Jan Hartvigsen, Mike Swain

Multi-site joint pain in older Australian women

Up to 80% of adults have experienced at least one joint pain site in the last 12 months. Interestingly, people with low back pain usually experience concomitant pain at other spinal levels and people with extremity pain have pain in adjacent joints. Multiple factors predict multi-site joint pain syndromes, however no studies have been performed that report the prevalence and compare the impact of multi-site joint pain in the vulnerable population of older women. This program of study will firstly provide a descriptive analysis of older women with multisite joint pain, and secondly explore clusters of joint pain and their impact on health-related quality of life.

Lead: Katie de Luca

Working group members: Matt Fernandez, Andreas Eklund, Arnold Wong, Jan Hartvigsen

Practices of female and male chiropractors in Australia: secondary data analysis

The aim of the current project is to report the prevalence and describe the clinical management characteristics of female and male chiropractors using a large nationally representative sample of Australian chiropractors.

Lead: Michelle Holmes

Working group members: Diana De Carvalho, Isabelle Pagé, Martha Funabashi, Katie Pohlman, Katie De Luca, Craig Moore, Jon Adams

Princess and the pea palpation study: Do physiological limits of human touch prevent clinicians from appreciating relevant biomechanical changes in low back pain patients?

The purpose of this study is to quantify the threshold at which clinicians can detect a change in stiffness via palpation and to determine if these detection thresholds influence a clinician's ability to identify clinically significant changes in stiffness. Manuscript being drafted

Lead: Greg Kawchuk

Working group members: Diana De Carvalho, Alex Breen, Isabelle Pagé, Arnold Wong, Mike Swain, Martha Funabashi

SafetyNET MIST - Mitigation Investigation of Spinal Manipulation Therapy

This will be a series of projects, with current focus on the development of the data collection instruments. The population has been done within a chiropractic teaching institute. Plans are to reach out to practicing doctors on an international platform. The first 2 development projects are listed below:

1. Determine the incidence of mild, moderate, and serious adverse events following SMT administered by chiropractic interns using the SafetyNET active surveillance reporting paper-based system. Data has been collected and manuscript in preparation.
2. Determine the incidence of mild, moderate, and serious adverse events following SMT administered by chiropractic interns using the SafetyNET active surveillance reporting electronic system. Data has been collected and analysis currently being done.

Lead: Katie Pohlman

Working group members: Martha Funabashi, Craig Moore, Mike Swain, Andreas Eklund, Greg Kawchuk

Systematic Review and Meta-Analysis exploring an aspect of prolonged sitting and transient back pain development

This project is currently in the planning stage to develop the research question. Full work will commence this September.

Lead: Diana De Carvalho

Working group members: Katie de Luca, Martha Funabashi, Jan Hartvigsen, Arnold Wong, Alex Breen, Jon Adams, Greg Kawchuk and Melker Johansson

The frequency of light or heavy physical activity and all-cause mortality: a longitudinal study of elderly Danish twins

The purpose of this study is to investigate the association between the frequency of different levels of physical activity and all-cause mortality, cardiovascular disease- and cancer-specific mortality in elderly Danish twins.

Lead: Matt Fernandez

Working group members: Melker Johansson, Eleanor Boyle, Arnold Wong, Katie Pohlman, Mike Swain, Greg Kawchuk, Kaare Christensen, Jan Hartvigsen

The profile of chiropractors managing older patients: Analyses of chiropractors from the ACORN practice-based research network

The aim of the current project is to determine practitioner and practice-related factors associated with the frequent treatment of older people by Australian chiropractors, using a large nationally representative sample of Australian chiropractors.

Lead: Katie de Luca

Working group members: Matt Fernandez, Craig Moore, Jon Adams

The profile of chiropractors managing patients with low back-related leg pain: Analyses of 1907 chiropractors from the ACORN practice-based research network

This study is a secondary analysis of a cross-sectional survey of Australian chiropractors who are members of the Australian Chiropractic Research Network (ACORN) - a national practice-based research network. The aim of this paper is to investigate the prevalence and profile of chiropractors who have a high caseload of low back pain with related leg symptoms, and is considered representative of the wider Australian chiropractic profession.

The study objectives are to investigate: 1) the proportion of Australian chiropractors who regularly treat patients who present with lumbar pain and associated referred or radicular symptoms; and 2) the practitioner characteristics, clinical practice characteristics and clinical management characteristics patient management factors associated with those chiropractors who frequently manage patients who present with lumbar pain and associated referred or radicular symptoms.

Lead: Matt Fernandez

Working group members: Craig Moore, Katie de Luca, Katie Pohlman, Mike Swain, Jon Adams

What's behind the development of Transient Sitting-Induced Back Pain in Healthy Participants?

Using data from a laboratory controlled study; this study will explore the qualitative factors that may explain why some individuals, with no history of low back pain, develop transient back pain during prolonged sitting. We have just received ethics clearance to work on this data as a group and I am in the process of completing the statistical analysis and outline for the paper.

Lead: Diana De Carvalho

Working group members: Alex Breen, Arnold Wong, Martha Funabashi, Isabelle Pagé, Greg Kawchuk and graduate student Matthew Barrett.

CARL Leadership Activities

Allied leadership workshop, Sydney, Australia

Driving innovation together in a changing Allied Health landscape – one day workshop; Sydney, Australia. Led by Matt Fernandez.

CARL projects on Researchgate.net

Raising the profile of CARL fellows through reporting CARL specific outputs utilising Researchgate.net's "Projects" pages. Alex Breen will curate this page as CARL specific citable outputs are in press.

CARL representation at Chiropractic Australia's and Chiropractors' Association of Australia's national conferences

The aim is to raise the profile of CARL fellows as research leaders and provide information regarding interests in a research-related career pathway on information sessions on the conferences. Led by Craig Moore.

Council and board memberships

Chair of the scientific council of the Swedish Chiropractic Association, Andreas Eklund
Research Chair of Sports Chiropractic Australia, Katie de Luca

Editorial boards

Editorial committee member of the ACFAS (Association Francophone pour le Savoir) magazine entitled *Découvrir*, Isabelle Pagé

Guest associate editor of a special theme entitled “Neurophysiological changes and low back pain” in *Frontiers in Neuroscience*, *Frontiers in Psychology*, *Frontiers in Neurology*, and *Frontiers in Systems Neuroscience*, Arnold Wong

Special issue on “Managing Musculoskeletal Conditions” in the *Advances in Integrative Medicine*. Guest editors: Katie Pohlman and Jan Hartvigsen

Women in Chiropractic Research Mentorship Group

The goal is to create a mentorship group as a resource for the unique complexities that can present for female chiropractors at various stages of their research career – from graduate student to clinician and to scientist. Led by Diana De Carvalho.

Upcoming Events

- International Back and Neck Pain Research Forum 2017: "Back to Basics"; Oslo, Norway – September 2017. [Website](#).
 - Mike Swain, Presentation and Poster presentation
- Geriatric Physiotherapy Conference; Seoul, South Korea – September 2017
 - Arnold Wong, Keynote speaker
- Pain Research Meeting 2017; Antwerp, Belgium – September 2017
 - Alex Breen, Poster presentation
- Chiropractors' Association of Australia New South Wales (CAANSW) State Conference: Lifting the blind fold on Best Practice Management; Sydney, Australia – September 2017. [Website](#).
 - Matt Fernandez, Presentation
 - Craig Moore, Coordinator of conference program
- Chiropractic Australia (CA) National Conference; Melbourne, Australia – October 2017. [Website](#).
- Chiropractors' Association of Australia (CAA) Annual Conference; Canberra, Australia – October 2017. [Website](#).
 - Matt Fernandez, Presentation
 - Craig Moore, Presentation and Coordinator of conference program
- Swedish Chiropractic Association's Biannual Meeting; Stockholm, Sweden – October 2017. [Website](#).
- Norwegian Chiropractors' Association Academic Congress; Bergen, Norway – October 2017
 - Martha Funabashi, Keynote speaker
- Annual chiropractic continuing education, Quebec Chiropractic Board; Québec, Canada – September 2017
 - Isabelle Pagé, Presentation
- University of Alberta's Integrative Health Institute (IHI) 2017 Conference: Contemporary Insights for Optimizing Health; Edmonton, Alberta, Canada – October 2017. [Website](#).
- Danish association of occupational health and safety consultants' annual conference (AM:2017); Nyborg, Denmark – November 2017. [Website](#).
 - Melker Johansson, Presentation
- Association of Chiropractic Colleges – Research Agenda Conference 2018: Competencies and Collaboration, Dallas, Texas, USA - March 2018
- Canadian Chiropractic Association National Convention and Tradeshow; Calgary, Alberta, Canada – April 2018. [Website](#).
- American Chiropractic Association Pediatrics Council's 10th Annual Pediatric Symposium; Dallas Texas, USA – April 2018. [Website](#).

- International Congress on Integrative Medicine & Health; Baltimore, Maryland, USA, – May 2018. [Website](#).
 - Call for abstracts closes on October 11, 2017
- 8th World Congress of Biomechanics; Dublin, Ireland – July, 2018. [Website](#).
 - Call for abstracts opens August 1, 2017 and closes December 19, 2017.
- WFC Educational Conference; London, England – October 2018. [Website](#).

CARL Fellows Publications anno 2017 – Individual projects

1. Adams J, Peng W, Cramer H, Sundberg T, **Moore C**, Amorin-Woods L *et al.* (2017). The prevalence, patterns, and predictors of chiropractic use among US adults: Results from the 2012 National Health Interview Survey. *Spine* (Phila Pa 1976). (In press).
2. Adams J, Lauche R, Peng W, Steel A, **Moore C**, Amorin-Woods LG *et al.* (2017). A workforce survey of Australian chiropractic: the profile and practice features of a nationally representative sample of 2,005 chiropractors. *BMC Complement Altern Med.* 17, 14.
3. Bishop, F.L., Coghlan, B., Geraghty, A.W., Everitt, H., Little, P., **Holmes, M.M.**, Seretis, D. and Lewith, G., 2017. What techniques might be used to harness placebo effects in non-malignant pain? A literature review and survey to develop a taxonomy. *BMJ open*, 7(6), p.e015516.
4. **Breen Ax**, Breen A. (2017) Uneven intervertebral motion sharing is related to disc degeneration and is greater in patients with chronic, non-specific low back pain: an in vivo, cross-sectional cohort comparison of intervertebral dynamics using quantitative fluoroscopy. *Eur Spine J.* (In press)
5. Breen A, **Breen Ax**, Mellor F, du Rose A, Bentman S. (2017). Control of intervertebral Motion: A Critical Element of Spine Control and a Target for Treatment. *J Orthop and Sports Phys Ther.* (In press).
6. **de Luca K**, Parkinson L, Haldeman S, Byles J, Blyth F. (2017). The relationship between spinal pain and comorbidity: a cross-sectional analysis of 579 community-dwelling, older, Australian women. *J Manipulative Physiol Ther.* (In press).
7. **de Luca K**, Fang S, Ong J, Shin K, Woods S, Tuchin P. (2017). The effectiveness of manual therapy on pain and disability in older persons with chronic low back pain: A systematic review. *J Manipulative Physiol Ther.* (In press).
8. **Funabashi M**, Nougrou F, Descarreaux M, Prasad N, Kawchuk G. (2017). New Investigator Award-Winning Paper. The influence of spinal manipulative therapy force magnitude and application site on spinal tissue loading: A biomechanical robotic serial dissection study in porcine motion segments. *J Manipulative Physiol Ther.* (Accepted).
9. **Funabashi M**, Nougrou F, Descarreaux M, Prasad N, Kawchuk G. (2017) Spinal tissue loading created by different methods of spinal manipulative therapy (SMT) application. *Spine (Phila pa 1976)* 42, 9.
10. **Holmes, M.M.**, Bishop, F.L. and Calman, L., 2017. “I just googled and read everything”: Exploring breast cancer survivors’ use of the internet to find information on complementary medicine. *Complementary Therapies in Medicine*, 33, pp.78-84.
11. Marchand AA, Mendoza L, Dugas C, Descarreaux M, **Pagé I.** (2017). Effects of practice variability on spinal manipulation learning. *J Chiropr Educ.* (In press).
12. Minkalis AL, Vining RD, Long CR, Hawk C, **de Luca K.** (2017). A systematic review of thrust manipulation for non-surgical shoulder conditions. *Chiropr Man Therap.* 25, 1.
13. **Moore CS**, Sibbritt DW, Adams J. (2017). A critical review of manual therapy use for headache disorders: prevalence, profiles, motivations, communication and self-reported effectiveness. *BMC Neurology* 17, 1-11.
14. **Pagé I**, Descarreaux M, Sobczak S. (2017). Development of a new palpation method using alternative landmarks for the determination of thoracic transverse processes: an in-vitro study. *Musculoskeletal Sci Pract.* 27, 142-149.
15. Umer W, Li H, Szeto G, **Wong AYL.** (2017). A low cost ergonomic intervention for mitigating physical workload during manual rebar tying. *J Constr Eng Manag.* (Accepted).
16. **Wong AYL**, Karppinen J, Samartzis D. (2017). Low back pain in older adults: risk factors, management options and future directions. *Scoliosis Spinal Disord* 12, 14.
17. Zhang Y, Leach M, Dennis, J, Bishop F.L, Cramer H, Chung V, Sibbritt D, Cook R, **Moore C**, Adams J. (2017). Complementary and Alternative Medicine Use among U.S. Adults with headache or migraine: Results from the 2012 National Health Interview Survey. *Headache* (Accepted).