
BIOGRAPHICAL SKETCH

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NAME Cynthia R. Long	POSITION TITLE Professor Director of Research, Davenport Campus		
eRA COMMONS USER NAME Friedalong1			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Winona State University, Winona, MN	BA, BS	1984	Mathematics, Statistics
Iowa State University, Ames, IA	MS	1989	Statistics
The University of Iowa, Iowa City, IA	PhD	1995	Biostatistics

B. Positions and Honors

Positions and Employment

1984-1987 Data Analyst, Section of Biostatistics, Department of Health Sciences Research, Mayo Clinic
1987-1989 Graduate Teaching Assistant, Department of Statistics, Iowa State University
1989-1992 Graduate Research Assistant, Biostatistics Consulting Center, The University of Iowa
1991 Summer Intern, Department of Biometrics Research, Merck & Co. Research Labs
1994-1995 Graduate Teaching Assistant, Department of Preventive Medicine, The University of Iowa
1995-2001 Assistant Professor, Palmer College of Chiropractic, Davenport, IA
1998- Director, Office of Data Management & Biostatistics, Palmer Center for Chiropractic Research
2001-2006 Associate Professor, Palmer College
2002-2006 Co-Director, MS in Clinical Research Program, Palmer College
2006- Professor, Palmer College
2007- Director, MS in Clinical Research Program, Palmer College
2011- Director of Research, Davenport Campus, Palmer College

Honors

1992-1995 Pre-Doctoral Fellow, The University of Iowa Center on Aging Institutional NIH NRSA
2006 Outstanding Faculty of the Year President's Award, Palmer College of Chiropractic
2013 Distinguished Achievement Award, American Statistical Association Section on Teaching of Statistics in the Health Sciences

Other Experience and Professional Memberships

1999-2015 Member, 45 NIH CSR and NCCIH Special Emphasis Panels
2000- Reviewer Board Member, *Spine*
2001-2015 Chair, 2 NIH CSR and 9 NCCIH Special Emphasis Panels
2002-2012 Section on Teaching of Statistics in the Health Sciences Executive Committee Member – American Statistical Association (Program Chair, 2003 Joint Statistical Meetings; Section Chair-Elect, 2005; Section Chair, 2006; Section Past-Chair, 2007; Council of Sections Rep, 2010-2012)
2002-2007 Member, Conference Planning Committee, ACC-RAC (Chiropractic Research Agenda)
2005- Member, Editorial Board, *Journal of Manipulative and Physiological Therapeutics*
2006- Member, Editorial Board, *Journal of the Canadian Chiropractic Association*
2007-2011 Chair, Data and Safety Monitoring Board, NIH Grant: 1U01AT001908
2008- Member, Genesis Health System IRB, Davenport, IA
2010-2013 Chair, Data and Safety Monitoring Body, NIH Grant: 1R01AT004411
2012-2013 Member, Editorial Board, *Evidence-Based Complementary and Alternative Medicine*
2013- Member, Data and Safety Monitoring Body, NIH Grant: 1R01AT006226
2014-2016 Member, American Statistical Association Council of Sections Governing Board
2014-2016 Elected member, American Statistical Association Board of Directors

C. Selected Peer-Reviewed Publications

1. Hondras MA, **Long CR**, Haan AG, Spencer LB and Meeker WC (2008). Recruitment and enrollment for the simultaneous conduct of two randomized controlled trials for patients with subacute and chronic low back pain at a CAM research center. *J Altern Complement Med* 14:983-92. PMID: PMC3116528
2. Hondras MA, **Long CR**, Cao Y, Rowell RM and Meeker WC (2009). A randomized controlled trial comparing two types of spinal manipulation and minimal conservative medical care for adults 55 and older with subacute or chronic low back pain. *J Manipulative Physiol Ther* 32:330-343. PMID: 19539115
3. Pohlman KA, Hondras MA, **Long CR**, Haan AG (2010). Practice patterns of doctors of chiropractic with a pediatric diplomate: a cross-sectional survey. *BMC Complem Altern Med* 10:26 (Epub 2010 Jun 14). PMID: 20546582
4. Schulz CA, Hondras MA, Evans RL, Gudavalli MR, **Long CR**, Owens EF, Wilder DG, Bronfort G (2011). Chiropractic and self-care for back-related leg pain: design of a randomized clinical trial. *Chiropr Man Therap* 19:8. PMID: PMC3072925
5. Wilder DG, Vining RD, Pohlman KA, Meeker WC, Xia T, DeVocht JW, Gudavalli RM, **Long CR**, Owens EF, Goertz CM (2011). Effect of spinal manipulation on sensorimotor functions in back pain patients: study protocol for a randomised controlled trial. *Trials* 12:161. PMID: PMC3148990
6. Ge W, Cao D-Y, **Long CR**, Pickar JG (2011). Plane of vertebral movement eliciting muscle lengthening history in the low back influences the decrease in muscle spindle responsiveness of the cat. *J Appl Physiol* 111(6):1735-1743 (Epub 2011 Sep 29). PMID: 21960662
7. Goertz CM, Pohlman KA, Vining RD, Brantingham JW, **Long CR** (2012). Patient-centered outcomes of high-velocity, low-amplitude spinal manipulation for low back pain: A systematic review. *J Electromyogr Kinesiol* 22:670-691. PMID: 2254288
8. Vaillant M, Edgecombe T, Long CR, Pickar JG, Kawchuk G (2012). The effect of duration and amplitude of spinal manipulative therapy (SMT) on spinal stiffness. *Manual Ther* 17(6):577-583. PMID: 22809745
9. Reed WR, Cao D-Y, **Long CR**, Kawchuk GN, Pickar JG (2013). Relationship between physical characteristics of spinal manipulation and neural responses in an animal model: effect of thrust amplitude, duration, rate, and type of linear thrust control. *J Evid Based Complementary Altern Med* 492039 (Epub 2013 Jan 20). PMID: 23401713
10. Goertz CM, **Long CR**, Hondras MA, Petri R, Delgado R, Lawrence DJ, Owens EF, Meeker WC (2013). Adding chiropractic manipulative therapy to standard medical care for patients with acute low back pain: the results of a pragmatic randomized comparative effectiveness study. *Spine* 38(8):627-634. PMID: 23060056
11. Reed WR, **Long CR**, Pickar JG (2013). Effects of unilateral facet fixation and facetectomy on muscle spindle responsiveness during simulated spinal manipulation in an animal model. *J Manipulative Physiol Ther* 36:585-594. PMID: 24161386
12. Goertz CM, Salsbury SA, Vining RD, **Long CR**, Andresen AA, Jones ME, Lyons KJ, Hondras MA, Killinger LZ, Wolinsky FD, Wallace RB (2013). Collaborative care for older adults: study protocol for a pragmatic, pilot randomized controlled trial of co-management of patients with low back pain by family medicine physicians and doctors of chiropractic. *Trials* 14:18. PMID: PMC3557195
13. DeVocht JW, Goertz CM, Hondras MA, **Long CR**, Schaeffer W, Thomann L, Spector M, Stanford CM (2013). A pilot study for a chiropractic intervention for management of TMD orofacial pain. *J Amer Dent Assoc* 144(10):1154-1163.
14. Cao D-Y, Reed WR, **Long CR**, Kawchuk GN, Pickar JG (2013). Lack of sustained lumbar muscle spindle responses to the mechanical parameters of a high velocity, low amplitude spinal manipulation: effect of thrust amplitude, duration, and type of linear thrust control. *J Manipulative Physiol Ther* 36:68-77. PMID: 23499141
15. Roecker CB, **Long CR**, Vining RD, Lawrence DJ (2013). Attitudes toward evidence-based clinical practice among doctors of chiropractic with diplomate-level training in orthopedics. *Chiropr Man Therap* 21:43. PMID: 24314309
16. Reed WR, **Long CR**, Kawchuk GN, Pickar JG (2014). Neural responses to the mechanical parameters of a high velocity, low amplitude spinal manipulation: effect of preload parameters. *J Manipulative Physiol Ther* 37(2):68-78 (Epub 2014 Jan 3). PMID: 24387888
17. Reed WR, Pickar JG, **Long CR** (2014). Effect of changing lumbar stiffness by single facet joint dysfunction on the responsiveness of muscle spindles to vertebral movement. *J Can Chiropr Assoc* 58(2):160-169. PMID: 24932020

18. Xia T, Wilder DG, Gudavalli MR, DeVocht JW, Vining RD, Pohlman KA, Kawchuck GN, **Long CR**, Goertz CM (2014). Study protocol for patient response to spinal manipulation – a prospective observational clinical trial on physiological and patient-centered outcomes in patients with chronic low back pain. *BMC Complement Altern Med* 14:292.
19. **Long CR**, Ackerman DL, Hammerschlag R, Delagran L, Peterson DH, Berlin M, Evans RL (2014). Faculty development initiatives to advance research literacy and evidence-based practice at CAM academic institutions. *J Altern Complement Med* 20(7):563-570. PMID: 24936915
20. Bronfort G, Hondras MA, Schulz CA, Evans RL, **Long CR**, Grimm R (2014). Spinal manipulation and home exercise with advice for subacute and chronic back-related leg pain: a trial with adaptive allocation. *Ann Intern Med* 161:381-391.
21. Edgecombe TL, Kawchuk GN, **Long CR**, Pickar JG (2015). The effect of application site of spinal manipulative therapy (SMT) on spinal stiffness. *Spine J* 15(6):1332-1338. PMID: 24139864
22. Gudavalli MR, Vining RD, Salsbury SA, Corber L, **Long CR**, Patwardan AG, Goertz CM (2015). Clinician proficiency in delivering manual treatment for neck pain within specified force ranges. *Spine J* 15(4):570-576. PMID: 25452013
23. Schneider MJ, Evans R, Haas M, Leach M, Hawk C, **Long C**, Cramer G, Walters O, Vihstadt C, Ternhorst L (2015). US chiropractors' attitudes, skills and uptake of evidence-based practice: A cross-sectional national survey. *Chiropr ManTherap* 23:16. PMID: 25949800
24. Reed WR, **Long CR**, Kawchuk GN, Pickar JG (2015). Neural responses to the mechanical parameters of a high velocity, low amplitude spinal manipulation: effect of specific contact site. *Manual Ther* (Epub ahead of print 2015 Mar 27)
25. Gudavalli MR, Salsbury SA, Vining RD, **Long CR**, Corber L, Patwardan AG, Goertz CM (2015). Development of an attention-touch control for manual cervical distraction: a pilot randomized clinical trial for patients with neck pain. *Trials* 16:259. PMID: 26044576
26. Goertz CM, Xia T, **Long CR**, Vining RD, Pohlman KA, DeVocht JW, Gudavalli RM, Owens EF, Meeker WC, Wilder DG (2015). Effect of spinal manipulation on sensorimotor functions in back pain patients—a randomized controlled trial. In press, *Manual Ther*.

D. Research Support

Ongoing

1-R13-AT008642 (PI: Long)
NIH/NCCAM

02/01/2015-01/31/2016

2015 Conference: Process of Integrating Evidence (PIE) for CAM Educators

This conference will provide a supportive environment for CAM educators to enhance their skills of integrating evidence-based principles into their curricula. These efforts will begin to increase competencies in evidence-based clinical decision making across CAM providers, and ultimately improve patient care.

Role: Principal Investigator

1-R34-AT008427 (PI: Goertz)
NIH/NCCAM

09/01/2014-06/30/2017

Collaborative Care for Veterans with Spine Pain and Mental Health Conditions

The goals of this project are to develop an integrative care model that includes doctors of chiropractic in multidisciplinary teams treating patients in Veterans Health Administration (VHA) facilities; use a consensus building process to tailor existing chiropractic guidelines to interlink with current VHA pain management initiatives; and conduct a pilot clinical trial to test this model in preparation for a powered, multi-site trial.

Role: Coinvestigator

W81XWH-10-DHP-CCTA (PI: Coulter, RAND Corporation)
Defense Health Program Chiropractic Clinical Trial Award
Assessment of Chiropractic Treatment for Low Back Pain, Military Readiness, and Smoking Cessation in Military Active Duty Personnel

02/15/2011-08/14/2017

The primary goal is to assess the effectiveness of chiropractic manipulative therapy for pain management and improved function in active duty service members with orthopedic injuries or disorders of the low back.

Role: Coinvestigator/Leader, Data Coordinating Center

2-R25-AT003580 (PI: Long)

09/30/2007-08/31/2016

NIH/NCCAM

Expanding EBCP and Research across the Palmer College of Chiropractic

In collaboration with the University of Iowa and Thomas Jefferson University, this project will increase the research content at PCC by enhancing faculty and student attitudes and increasing knowledge and skills regarding evidence-based practice principles and education.

Role: Principal Investigator

Completed

1-R21-AT007547 (PI: Schneider, U Pitt)

09/01/2012-08/31/2015

NIH/NCCAM

Distance Education OnLine Intervention for Evidence Based Practice Literacy

This project will test on online intervention for increasing doctors of chiropractic attitudes, knowledge and skills regarding evidence-based practice.

Role: Coinvestigator

1-U19-AT004663 (PI: Goertz)

06/01/2008-05/31/2015

NIH/NCCAM

Developmental Center for Clinical and Translational Science in Chiropractic

The long range goal is to understand the appropriate clinical role of spinal manipulation in our evolving healthcare system by developing models for the rigorous conduct of clinical and translational research involving manipulative techniques.

Role: Coinvestigator/Core Leader: Clinic and Data Core

R18-HP-15126 (PI: Goertz)

09/01/2009-08/31/2013

HRSA

Co-Management of Older Adults with Low Back Pain by Medical Physicians and Doctors of Chiropractic

The long term goal is to enhance human health by improving quality of care through the use of a comprehensive, feasible accessible, effective, team-based multi-disciplinary approach to health care delivery for sub-acute and chronic low back pain in older adults.

Role: Coinvestigator

1-U19-AT004137 (PI: Pickar)

07/01/2007-09/28/2012

NIH/NCCAM

Developmental Center to Study Mechanisms and Effects of Chiropractic Manipulation

The long range goal is to explore and understand the clinical role of spinal manipulation and the physiological and biomechanical mechanisms of spinal manipulation loads.

Role: Coinvestigator/Core Leader: Biostatistics and Data Management Core