

## CURRICULUM VITAE

**NAME:** Kelly Holt



### CAREER STATEMENT:

I was a member of the 1998 inaugural graduating class of the New Zealand College of Chiropractic. Besides my chiropractic degree, I also hold a Bachelor of Science majoring in physiology and a PhD in Health Science from the University of Auckland. My PhD focused on the effects of chiropractic care on sensorimotor function and falls risk in older adults. I have published 44 research articles in peer reviewed journals, with a focus on investigating the effects of chiropractic care on nervous system function and the reliability of vertebral subluxation indicators. I have won several international research awards and been involved with projects and research initiatives that have generated close to three million dollars in external research income for the College. I worked in private practice as a chiropractor for 10 years following graduation and have taught at the New Zealand College of Chiropractic since 2000. I am currently the Dean of Research at the College. In this role I oversee the integration of research into the College curriculum, upskill staff and faculty in their research abilities, supervise the day-to-day operations of the Centre for Chiropractic Research, which is the Colleges research arm, and supervise and conduct research within the Centre. I am also a member of the Colleges senior leadership team and I am an elected member of the Council on Chiropractic Education Australasia Accreditation Committee. I was named 'Chiropractor of the Year' by the New Zealand College of Chiropractic Alumni Association in 2012 and by the New Zealand Chiropractors' Association in 2014. I was named the New Zealand College of Chiropractic Staff member of the Year in 2019.

### CURRENT POSITION:

**2016- to present:** Dean of Research, New Zealand College of Chiropractic, New Zealand

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### PREVIOUS POSITIONS HELD:

**2012- to 2016:** Research Fellow, New Zealand College of Chiropractic, New Zealand  
**2010- to 2012:** Assistant Director of Research, New Zealand College of Chiropractic, New Zealand  
**2003- to present:** Lecturer, New Zealand College of Chiropractic, Auckland, New Zealand  
**2000-2006:** Clinic Supervisor New Zealand College of Chiropractic, New Zealand.  
**1999-2008:** Private Chiropractic practice, Auckland, New Zealand

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### EDUCATIONAL QUALIFICATIONS:

**2014:** University of Auckland, PhD (Health Sciences)  
**2009:** University of Auckland, PGDipHSc - Distinction (Epidemiology/Biostatistics)  
**2007:** University of Auckland, PGCertHSc (Epidemiology)  
**2004:** Auckland University of Technology, COP (Quantitative Research)  
**1999:** New Zealand School of Chiropractic, BSc (Chiropractic)  
**1996:** University of Auckland, BSc (Physiology and Psychology)

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## SIGNIFICANT DISTINCTIONS / AWARDS

- 2019:** New Zealand College of Chiropractic Staff Member of the Year
- 2016:** First place award winning paper at The Parker Experience Seminar in Las Vegas, USA. for the research study 'Chiropractic adjustments alter sensorimotor integration in the pre-frontal cortex – A brain localisation study.'
- 2015:** Chiropractors Association of Australia Research Symposium Delegates Award
- 2014:** New Zealand Chiropractors' Association Chiropractor of the Year
- 2013:** Awarded New Zealand Association of Private Education Providers Margaret Yates Scholarship
- 2013:** Awarded New Zealand Chiropractors' Association Mackay Scholarship
- 2012:** New Zealand College of Chiropractic Alumni Association Chiropractor of the Year
- 2011:** New Zealand College of Chiropractic Outstanding Service Award
- 2009:** First, second and third prize award winning papers at the Chiropractors Association of Australia Scientific Symposium, Melbourne, Australia, 22<sup>nd</sup> November, 2009
- 2009:** Awarded University of Auckland Senior Health Research Doctoral Scholarship for 2010-2013
- 2009:** Awarded University of Auckland Doctoral Scholarship 2009
- 2009:** Post Graduate Diploma in Health Science (Epidemiology /Biostatistics) was awarded with Distinction by the University of Auckland
- 2008:** Australasian Epidemiological Association Student Prize, University of Auckland, in recognition of exemplary scholastic performance in epidemiology
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## Memberships

- New Zealand Chiropractors' Association member 1999 – present
  - New Zealand Registered Chiropractor 1999-present
  - College of Chiropractic Paediatrics 2015- 2018
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## PROFESSIONAL SPECIALTIES / CAREER

### TEACHING (at the New Zealand College of Chiropractic):

#### Undergraduate Level

2012- present **Developed and taught Evidence Based Chiropractic Course, Co-ordinated 3 Neuroscience Courses, and Guest Lectured in Neuroscience courses and Professional Practice Courses**

The aim of these lectures is to incorporate research into the College curriculum throughout the programme, to provide students with the foundational knowledge they will require to perform literature searches, critically appraise and apply best evidence for health promotion and patient care; and acquire, integrate, and utilise foundational knowledge relevant to clinical practice.

2006 - 2014 **Developed and taught two Research Methodology courses**

The aim of these two courses was to develop chiropractors that are competent consumers of the research literature and to develop their critical evaluation skills. The courses use a

combination of didactic classroom lecturing, and case-based lab tutorials. These courses have received good student evaluations the past few years.

**2004 - 2012 Developed and taught three Neuroscience courses**

These courses cover neuroanatomy, neuro-embryology and neurophysiology at NZQA Level 6 and 7. The courses have both a lab and lecture component. These courses have received top student evaluations. Current research regarding the neurophysiological effects of chiropractic care are incorporated, evaluated and discussed within these courses.

**2002 - 2006 Developed and taught one Chiropractic Science course**

This course covered science and theories related to chiropractic mechanisms of action at NZQA Level 6 and 7. Current research regarding the neurophysiological effects of chiropractic care are were incorporated, evaluated and discussed within this course.

### **Post-graduate Research supervision**

**2019**

Co-supervisor for one PhD student (Tanja Glucina) from Auckland University of Technology, Auckland, currently in process for the project titled "Contemporary chiropractic profession in Aotearoa/New Zealand: Shifting practice and outcomes"

Co-supervisor for one PhD student (Alice Cade) from University of Auckland, Auckland, currently in process for the project titled "Oculomotor function in young adults with mild traumatic brain injury"

**2016**

Co-supervisor for one Health Science MSc student (Aisha Strand) from Auckland University of Technology, Auckland, currently in process for the project titled "Can chiropractic adjustments change multisensory integration and sensorimotor integration in children with autism? A feasibility study"

Co-supervisor for one Health Science MSc student (Alice Cade) from Auckland University of Technology, Auckland, currently in process for the project titled "Chiropractic care and the control of eye movement in children with attention deficit hyperactivity disorder: A pilot study"

Co-supervisor for one Master of Public Health student (Beau Woods) from Torrens University in Australia, currently in process for the project titled "Reliability of the Advanced Biostructural Correction synchronous test."

### **Theses and Dissertations**

2009 - 2014 PhD "Effectiveness of Chiropractic Care in Improving Sensorimotor Function Associated with Falls Risk in Older People" University of Auckland, Auckland, New Zealand. Thesis submitted September 2013; defended successfully March 2014.

### Summary statement:

Dr Holts' areas of research interest include falls prevention, neurology, reliability of vertebral subluxation indicators and population health. His PhD focused on the effects of chiropractic care on sensorimotor function and falls risk in older adults.

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### RESEARCH PUBLICATIONS (MANUSCRIPTS).

#### 2020

Glucina TT, Krägeloh CU, Farvid P, Holt K. Moving towards a contemporary chiropractic professional identity. *Complement Ther Clin Pract.* 2020;39:101105

Navid MS, Niazi IK, Lelic D, Nedergaard RB, Holt K, Amjad I, et al. Investigating the effects of chiropractic spinal manipulation on eeg in stroke patients. *Brain sciences.* 2020;10

Amjad I, Niazi IK, Toor HG, Nedergaard RB, Shafique M, Holt K, et al. Acute effects of aerobic exercise on somatosensory-evoked potentials in patients with mild cognitive impairment. *Brain sciences.* 2020;10

Steven Waterstone T, Niazi IK, Navid MS, Amjad I, Shafique M, Holt K, et al. Functional connectivity analysis on resting-state electroencephalography signals following chiropractic spinal manipulation in stroke patients. *Brain sciences.* 2020;10

#### 2019

Holt, K.; Niazi, I.K.; Nedergaard, R.W.; Duehr, J.; Amjad, I.; Shafique, M.I.; Anwar, M.N.; Ndetan, H.; Turker, K.S.; Haavik, H. The effects of a single session of chiropractic care on strength, cortical drive, and spinal excitability in stroke patients. *Scientific Reports*, 2019 9:2673. doi:10.1038/s41598-019-39577-5

Navid, M.S., Lelic, D., Niazi, I.K., Holt, K., Mark, E.B., Drewes, A.N., Haavik, H. (2019). The Effects of Chiropractic Spinal Manipulation on Central Processing of Tonic Pain - a Pilot Study Using Standardized Low-Resolution Brain Electromagnetic Tomography (sLORETA). *Scientific Reports*

Kingett, M., Holt, K., Niazi, I. K., Nedergaard, R. W., Lee, M., Haavik, H. (2019). Increased voluntary activation of the elbow flexors following a single session of spinal manipulation in a subclinical neck pain population. *Brain Sciences*, 9:136. doi:10.3390/brainsci9060136

#### 2018

Cecen, S., Niazi, I., Nedergaard, R., Cade, A., Allen, K., **Holt, K.**, Haavik, H., Türker, K. (2018). *Posture modulates the sensitivity of the H-reflex. Experimental Brain Research.* 1-7

Christiansen, T. L., Niazi, I. K., **Holt, K.**, Nedergaard, R. W., Duehr, J., Allen, K., ... & Haavik, H. (2018). The effects of a single session of spinal manipulation on strength and cortical drive in athletes. *European Journal of Applied Physiology*, 1-13.

Hunt, B., **Holt, K.**, Cade, A. (2018) Improvement in concussion symptoms of headache, poor concentration and photophobia in a 13-year-old male receiving chiropractic care: A case report *Journal of Clinical Chiropractic Paediatrics*, 17(1),1405-1409

Haavik, H.; Özyurt M.O.; Niazi, I.K.; **Holt, K.**; Nedergaard, R.W.; Yilmaz, G.; Türker, K.S. (2018) Chiropractic manipulation increases maximal bite force in healthy individuals. *Brain Sciences*. 8(76); doi:10.3390/brainsci8050076

## 2017

Haavik, H., Niazi, I.K., **Holt, K.**, & Murphy, B. (2016). The effects of 12 weeks of chiropractic care on central integration of dual somatosensory input in chronic pain patients: A preliminary study. *Journal of Manipulative and Physiological Therapeutics*, 40(3):127-138  
doi:10.1016/j.jmpt.2016.10.002

**Holt, K.**, Russell, D., Cooperstein, R., Young, M., Sherson, M., Haavik, H. (2017). Interexaminer reliability of seated motion palpation in defined spinal regions for the stiffest spinal site using continuous measures analysis *Journal of Manipulative and Physiological Therapeutics* Accepted for Publication

Cade, A., Sherson, M., **Holt, K.**, Dobson, G., Pritchard, K., Haavik, H. (2017) Differences in learning retention when teaching a manual motor skill with a visual vs written instructional aide *Journal of Chiropractic Education* Accepted for publication

## 2016

**Holt, K.**, Haavik, H., Lee, A.C.L., Murphy, B., & Raina Elley, R. (2016) Effectiveness of chiropractic care to improve sensorimotor function associated with falls risk in older people: A randomized controlled trial. *Journal of Manipulative and Physiological Therapeutics*. May;39(4):267-78. doi: 10.1016/j.jmpt.2016.02.003.

Luscombe, S., McCormick, J., Haavik, H., **Holt, K.** (2016) The amelioration of tension-type chronic daily headache, episodic migraine, and co-existing musculoskeletal neck and arm pain in an 89-year-old male receiving chiropractic care: A case report. *Chiropractic Journal of Australia*: 44(2)

Lelic, D., Niazi, I.K., **Holt, K.**, Jochumsen, M., Dremstrup, K., Yelder, P., Murphy, B., Drewes A. M., & Haavik, H. (2016). Manipulation of dysfunctional spinal joints affects sensorimotor integration in the prefrontal cortex: A brain source localization study. *Neural Plasticity*, 1.doi:10.1155/2016/3704964.

Jochumsen, M., Niazi, I.K., Signal, N., Nedergaard, R.W., **Holt, K.**, Haavik, H., &... Lago-Rodriguez, A. (2016) Pairing voluntary movement and muscle-located electrical stimulation increases cortical excitability. *Frontiers in Human Neuroscience*, 1.  
doi:10.103389/fnhum.2016.2016.00482

## 2015

Collins K, Alcantara J, **Holt K.** (2015) Resolution of Breastfeeding and Gastrointestinal Complaints in Infant Twins with Plagiocephaly & Scaphocephaly Following Birth Trauma: A Case Series. *J Pediatr Matern & Fam Health – Chiropr*, 2015(1):34-41

## **2014**

Singh K.K., Alcantara J, **Holt K.** (2014) Improvement in a pediatric patient with Autistic Spectrum Disorder (ASD) following a trial of chiropractic care: a case report. *J Clin Chiropr Pediatr*. 14(3):1183-6

Luscombe S, Alcantara J, Holmes S, **Holt K.** (2014) Resolution of Nocturnal Enuresis in a 10-year-old Child Following Chiropractic Care to Reduce Vertebral Subluxation: A Case Report. *J Pediatr Matern & Fam Health – Chiropr*, 2014(3):55-59

**Holt K.R.** (2014) Effectiveness of Chiropractic Care in Improving Sensorimotor Function Associated with Falls Risk in Older People. Auckland: General Practice and Primary Healthcare, *University of Auckland*; 2014.

## **2012**

**Holt, K. R.**, Haavik, H., & Elley, C. R. (2012). The Effects of Manual Therapy on Balance and Falls: A Systematic Review. *Journal of Manipulative and Physiological Therapeutics*. 35(3), 227-234. doi: 10.1016/j.jmpt.2012.01.007

Kim I, Hammond K, Alcantara J, **Holt K.** (2012) *Immediate resolution of constipation in an infant following chiropractic care: A case report and selective review of literature*. *J Pediatr Matern & Fam Health – Chiropr*, 2012(2):61-65

**Holt, K.R.**, Haavik, H. (2012). Chiropractic Care in New Zealand: Theories, Practice and Research. *New Zealand Journal of Natural Medicine*, Issue 6 Aug-Nov.

## **2011**

**Holt, K.R.**, Noone, P.L., Short, K., Elley, C.R., & Haavik, H. (2011) Falls risk profile of older chiropractic patients. *Journal of Manipulative and Physiological Therapeutics*. 34:78-87

Cleave, J., Alcantara, J., **Holt, K.** (2011). Improvement in autistic behaviours following chiropractic care: A case series. *J Pediatr Matern & Fam Health – Chiropr*, 2011(4):125-131

## **2010**

**Holt, K.**, Beck, R., Sexton, S., Haavik Taylor, H. (2010) Chiropractors' Association of Australia Scientific Symposium 2009 third prize award winning paper: Reflex effects of a spinal adjustment on blood pressure. *Chiropractic Journal of Australia*. 40:85-9.

Haavik Taylor, H., **Holt, K.R.**, Murphy, B. (2010). Chiropractors' Association of Australia Scientific Symposium 2009 first prize award winning paper: Exploring the neuromodulatory effects of the vertebral subluxation and chiropractic care. *Chiropractic Journal of Australia*, 40(1): 37-44.

Postles, A., Haavik Taylor, H., **Holt, K.** (2010). Changes in asthma symptoms and bedwetting in a four year old child receiving chiropractic care. *Chiropractic Journal of Australia*, 40(1): 34-6.

**Holt K**, Beck R, Sexton S, Haavik Taylor H. (2010). Chiropractors' Association of Australia Scientific Symposium 2009 third prize award winning paper: *Reflex effects of a spinal adjustment on blood pressure*. *Chiropr J Aust*, 40(3): 85-9

Kelly D, **Holt K.** (2010). *Resolution of vertigo, migraines and neck pain in a 12 year old boy receiving chiropractic care – A case study*. *J Pediatr Matern & Fam Health – Chiropr*, 2010(4):150-3

Haavik Taylor H, **Holt K**, Murphy B. (2010). Chiropractors' Association of Australia Scientific Symposium 2009 first prize award winning paper: *Exploring the neuromodulatory effects of the vertebral subluxation and chiropractic care*. *Chiropr J Aust*, 40(1): 37-44.

## 2009

**Holt, K.**, Kelly, B., & Haavik Taylor, H. (2009). Practice characteristics of chiropractors in New Zealand. *Chiropractic Journal of Australia*, 39(3):103-9.

**Holt, K.R.**, Russell, D.G., Hoffmann, N.J., Bruce, B.I., Bushell, P.M., Haavik Taylor, H. (2009). Interexaminer reliability of a leg length analysis procedure among novice and experienced practitioners. *Journal of Manipulative and Physiological Therapeutics*, 32(3): 216-22.

**Holt K**, Kelly B, Haavik Taylor H. (2009). *Practice characteristics of chiropractors in New Zealand*. *Chiropr J Aust*. 39(3):103-9

**Holt KR**, Russell DG, Hoffmann NJ, Bruce BI, Bushell PM, Haavik Taylor H. (2009). *Interexaminer reliability of a leg length analysis procedure among novice and experienced examiners*. *J Manipulative Physiol Ther* 32(3): p. 216-222

## 2006

Boone WR, Oswald P, **Holt K**, Beck RW, Singh K, Ashton A. (2006). *Long term assessment of blood indices and immune panel profiling of subjects receiving chiropractic care: A pilot study*. *J Vert Sublux Res*, June 7<sup>th</sup>, 2006 pp 1-11.

Boone WR, Oswald P, **Holt K**, Beck RW, Singh K, Ashton A. (2006). *Physical, physiological, and immune status changes, coupled with self-perceptions of health and quality of life, in subjects receiving chiropractic care: A pilot study*. *J Vert Sublux Res*, July 5<sup>th</sup>, 2006, pp1-6.

## 2005

**Holt KR**, Beck RW. (2005). *Chiropractic patients presenting to the New Zealand College of Chiropractic teaching clinic: a short description of patients and patient complaints*. *Chiropr J Aust* 35:122-4.

## 2004

Beck RW, **Holt K**, Fox, M, Hurtgen-Grace, KL. (2004). *Radiographic anomalies that may alter chiropractic intervention strategies found in a New Zealand population*. J Manipulative Physiol Ther. Nov-Dec;27(9):554-9

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#### REFEREES

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