



# **Five Most Important Chiropractic Studies for the Average Person**

Dr. Sarah Kotlerman - Averio Health Institute

# Chiropractic & Your Genetic Health

Journal of Molecular & Genetic Medicine, 2017

- Repair cervical curve = increased telomere length
- Telomeres are “tails” on the end of your chromosomes
  - Keeps your genetics from degrading
  - Telomeres typically shorten with age and are correlated with many diseases including cancer
  - Telomeres lengthen suggests an increase in life expectancy and a reduction in disease risk



Journal of Molecular and Genetic  
Medicine

Fedorchuk et al., J Mol Genet Med 2017, 11:2  
DOI: 10.4172/1747-0862.1000269

Case Report

OMICS International

## Increased Telomere Length and Improvements in Dysautonomia, Quality of Life, and Neck and Back Pain Following Correction of Sagittal Cervical Alignment Using Chiropractic BioPhysics® Technique: a Case Study

Fedorchuk C\*, Lightstone DF, McCoy M and Harrison DE

425 Peachtree Parkway, Suite 315, Cumming, GA 30041, United States

### Abstract

**Objective:** To present a prospective case study on the increase of telomere length, improvement in nocturnal polyuria, neck and mid-back pain, autonomic nervous system adaptability, and health-related quality of life following correction of the sagittal cervico-thoracic spinal alignment and posture using chiropractic biophysics® (CBP®) technique.

**Clinical features:** A 35-year-old white female elementary school teacher presented with chronic neck and mid-back pain for 5 years following a motor vehicle collision as well as nocturnal polyuria. Examination and radiography revealed forward head posture and loss of cervical lordosis consistent with vertebral subluxation. Patient telomere length was derived from nucleated white blood cells obtained from a blood test. Quality of life measures were determined by the Short-Form 36 health survey and heart rate variability was measured.

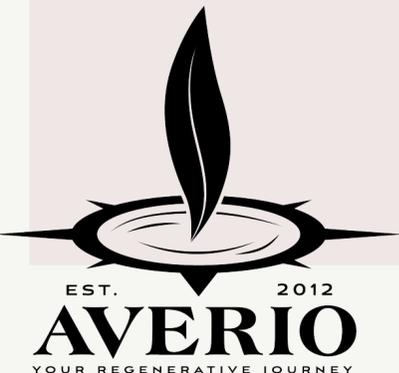
**Intervention and outcome:** The patient received CBP® spinal care including Mirror Image® corrective spinal exercises, adjustments, and traction. Full spine and drop table adjustments were administered. After 36 visits, she reported improvement in her nocturnal polyuria, neck and mid-back pain, and quality of life. Cervical x-rays showed correction of cervical lordosis and forward head posture. A blood test showed significant improvement in patient telomere length and heart rate variability improved from a health risk to within normal limits.

**Conclusion:** Our case suggests that correction of cervical lordosis and forward head postures by CBP® Mirror Image® methods improved the sagittal spinal alignment and posture and was temporally associated with lengthened telomeres, improved nocturnal polyuria, neck and mid-back pain, quality of life, and autonomic nervous system adaptability.

# Chiropractic & Back/ Neck Pain

Journal *Trials*, 2019

- A course of chiropractic care improved:
  - **Chronic Neck Pain**
  - **Heart Rate Variability**
  - **Increase Mobility**
  - Recommended as a **first action step** for anyone with neck/back pain.



STUDY PROTOCOL

Open Access



## The effect of spinal manipulative therapy on heart rate variability and pain in patients with chronic neck pain: a randomized controlled trial

Anders Galaasen Bakken<sup>1\*</sup>, Iben Axén<sup>1</sup>, Andreas Eklund<sup>1</sup> and Søren O'Neill<sup>2</sup>

### Abstract

**Background:** Recent experimental research has suggested that spinal manipulative therapy (SMT) may reduce pain through modulation of the ascending pain signals and/or the central pain-regulating mechanisms. People with persistent neck pain (NP) have also been found to have disturbances in autonomic nervous system (ANS) regulation. A common way to study the ANS is to measure heart rate variability (HRV). It is not known whether deviations in HRV are related to changes in pain perception or to the treatment response to SMT.

Commonly, an individual in pain will experience pain reduction when exposed to a second pain stimulus, a mechanism known as conditioned pain modulation (CPM). Patients with persistent pain have been found to have a reduced CPM reaction. It is not known whether this is predictive of treatment response to SMT.

The aim of the study is to examine the effects of SMT on HRV and pain. Further, a secondary aim is to test whether a CPM test can be used to predict treatment response in a population of patients with recurrent and persistent NP.

**Method/design:** A multicentre randomized controlled clinical trial will be carried out in multidisciplinary primary care clinics. This setting is chosen to minimize bias resulting from patient preference for the treatment modality and provider. The subjects are either self-referred or referred from other health care practitioners locally. The treatment modalities are two well-known interventions for NP; SMT and stretching exercises compared to stretching exercises alone. HRV will be measured using a portable heart monitor. The subjective pain experience will be investigated by assessing pain intensity and the affective quality of pain. CPM will be measured with a standardized cold pressor test. Measurements will be performed three times during a 2-week treatment series.

**Discussion:** The study will utilize normal clinical procedures, which should aid the transferability and external validity of the results. The study will provide knowledge regarding the underlying mechanisms of the effects of SMT. Furthermore, the study will examine whether a CPM test is predictive of treatment outcome in a population of patients with recurrent and persistent NP.

**Trial registration:** ClinicalTrials.gov, [NCT03576846](https://doi.org/10.1186/s13063-019-3678-8). Registered on 3 July 2018.

**Keywords:** Pain, Heart rate variability, Conditioned pain modulation, Spinal manipulative therapy, Chiropractic, Neck pain

# Chiropractic & Anti-Aging Brain Function

Journal of Manipulative & Manipulative Therapies, 2016

- A single chiropractic adjustment improve motor sensory & multi sensory function in an aging population.
- **Increased brain to tissue function**
- **Increased brain to brain function**
- Safe and effective anti-aging to improvement life quality through improving brain function.



Randomized Controlled Trial J Manipulative Physiol Ther. 2016 May;39(4):267-78.

doi: 10.1016/j.jmpt.2016.02.003. Epub 2016 Apr 2.

## Effectiveness of Chiropractic Care to Improve Sensorimotor Function Associated With Falls Risk in Older People: A Randomized Controlled Trial

Kelly R Holt <sup>1</sup>, Heidi Haavik <sup>2</sup>, Arier Chi Lun Lee <sup>3</sup>, Bernadette Murphy <sup>4</sup>, C Raina Elley <sup>5</sup>

Affiliations

PMID: 27050038 DOI: 10.1016/j.jmpt.2016.02.003

### Abstract

**Objective:** This study assessed whether 12 weeks of chiropractic care was effective in improving sensorimotor function associated with fall risk, compared with no intervention, in community-dwelling older adults living in Auckland, New Zealand.

**Methods:** Sixty community-dwelling adults older than 65 years were enrolled in the study. Outcome measures were assessed at baseline, 4 weeks, and 12 weeks and included proprioception (ankle joint position sense), postural stability (static posturography), sensorimotor function (choice stepping reaction time), multisensory integration (sound-induced flash illusion), and health-related quality of life (SF-36).

**Results:** Over 12 weeks, the chiropractic group improved compared with the control group in choice stepping reaction time (119 milliseconds; 95% confidence interval [CI], 26-212 milliseconds;  $P = .01$ ) and sound-induced flash illusion (13.5%; 95% CI, 2.9%-24.0%;  $P = .01$ ). Ankle joint position sense improved across the 4- and 12-week assessments (0.20°; 95% CI, 0.01°-0.39°;  $P = .049$ ). Improvements were also seen between weeks 4 and 12 in the SF-36 physical component of quality of life (2.4; 95% CI, 0.04-4.8;  $P = .04$ ) compared with control.

**Conclusion:** Sensorimotor function and multisensory integration associated with fall risk and the physical component of quality of life improved in older adults receiving chiropractic care compared with control. Future research is needed to investigate the mechanisms of action that contributed to the observed changes in this study and whether chiropractic care has an impact on actual falls risk in older adults.

**Keywords:** Accidental Falls; Aged; Chiropractic; Feedback, Sensory; Postural Balance; Proprioception; Quality of Life.

# Chiropractic & Post Stroke Outcomes

Journal *Brain Sciences*, 2020

- A single chiropractic adjustment improved brain function in **post-stroke patient by 39% on EEG**



Article

## Investigating the Effects of Chiropractic Spinal Manipulation on EEG in Stroke Patients

Muhammad Samran Navid <sup>1,2,3</sup> , Imran Khan Niazi <sup>3,4,5,\*</sup> , Dina Lelic <sup>1</sup>, Rasmus Bach Nedergaard <sup>1,2,3</sup> , Kelly Holt <sup>3</sup>, Imran Amjad <sup>3,6</sup>, Asbjørn Mohr Drewes <sup>1,2</sup> and Heidi Haavik <sup>3</sup>

<sup>1</sup> Mech-Sense, Department of Gastroenterology and Hepatology, Aalborg University Hospital, 9000 Aalborg, Denmark; m.navid@rn.dk (M.S.N.); dilelic@gmail.com (D.L.); r.nedergaard@rn.dk (R.B.N.); amd@rn.dk (A.M.D.)

<sup>2</sup> Department of Clinical Medicine, Aalborg University, 9000 Aalborg, Denmark

<sup>3</sup> Centre for Chiropractic Research, New Zealand College of Chiropractic, Auckland 1060, New Zealand; kelly.holt@nzchiro.co.nz (K.H.); imran.amjad@nzchiro.co.nz (I.A.); Heidi.Haavik@nzchiro.co.nz (H.H.)

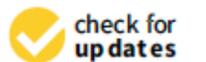
<sup>4</sup> Faculty of Health & Environmental Sciences, Health & Rehabilitation Research Institute, AUT University, Auckland 0627, New Zealand

<sup>5</sup> Centre for Sensory-Motor Interactions, Department of Health Science and Technology, Aalborg University, 9220 Aalborg, Denmark

<sup>6</sup> Riphah College of Rehabilitation Sciences, Riphah International University, Islamabad 46000, Pakistan

\* Correspondence: imran.niazi@nzchiro.co.nz; Tel.: +64-9-3939-875

Received: 2 April 2020; Accepted: 26 April 2020; Published: 27 April 2020



**Abstract:** **Objective:** The purpose of this study was to evaluate the impact of chiropractic spinal manipulation on the early somatosensory evoked potentials (SEPs) and resting-state electroencephalography (EEG) recorded from chronic stroke patients. **Methods:** Seventeen male patients (53 ± 12 years old) participated in this randomized cross-over study. The patients received chiropractic spinal manipulation and control intervention, in random order, separated by at least 24 hours. EEG was recorded before and after each intervention during rest and stimulation of the non-paretic median nerve. For resting-state EEG, the delta-alpha ratio, brain-symmetry index, and power spectra were calculated. For SEPs, the amplitudes and latencies of N20 and N30 peaks

# Chiropractic & Mental Health

Journal *Neural Plasticity*, 2016

- A single chiropractic adjustment improves prefrontal cortex function.
- Prefrontal cortex is the part of the brain responsible for **higher functions** such as learn, behavior, cognition, emotional balance.
- Prefrontal cortex is often what is damaged or dysfunction in **cases of chronic pain, addiction or mental illness.**



Hindawi Publishing Corporation  
Neural Plasticity  
Volume 2016, Article ID 3704964, 9 pages  
<http://dx.doi.org/10.1155/2016/3704964>



*Research Article*

## Manipulation of Dysfunctional Spinal Joints Affects Sensorimotor Integration in the Prefrontal Cortex: A Brain Source Localization Study

Dina Lelic,<sup>1</sup> Imran Khan Niazi,<sup>2,3,4</sup> Kelly Holt,<sup>2</sup> Mads Jochumsen,<sup>3</sup> Kim Dremstrup,<sup>3</sup> Paul Yelder,<sup>5</sup> Bernadette Murphy,<sup>5</sup> Asbjørn Mohr Drewes,<sup>1,3</sup> and Heidi Haavik<sup>2,5</sup>

<sup>1</sup>Mech-Sense, Department of Gastroenterology and Hepatology, Aalborg University Hospital, 9000 Aalborg, Denmark

<sup>2</sup>Centre for Chiropractic Research, New Zealand College of Chiropractic, Auckland 1060, New Zealand

<sup>3</sup>Centre for Sensory-Motor Interactions (SMI), Department of Health Science and Technology, Aalborg University, 9100 Aalborg, Denmark

<sup>4</sup>Faculty of Health & Environmental Sciences, Health & Rehabilitation Research Institute, AUT University, Auckland 1010, New Zealand

<sup>5</sup>Faculty of Health Sciences, University of Ontario Institute of Technology, ON, Canada L1H 7K4

Correspondence should be addressed to Dina Lelic; [dl@mech-sense.com](mailto:dl@mech-sense.com)

Received 12 November 2015; Accepted 28 January 2016

Academic Editor: Bruno Poucet

Copyright © 2016 Dina Lelic et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Objectives.* Studies have shown decreases in N30 somatosensory evoked potential (SEP) peak amplitudes following spinal manipulation (SM) of dysfunctional segments in subclinical pain (SCP) populations. This study sought to verify these findings and to investigate underlying brain sources that may be responsible for such changes. *Methods.* Nineteen SCP volunteers attended two experimental sessions, SM and control in random order. SEPs from 62-channel EEG cap were recorded following median nerve stimulation (1000 stimuli at 2.3 Hz) before and after either intervention. Peak-to-peak amplitude and latency analysis was completed for different SEPs peak. Dipolar models of underlying brain sources were built by using the brain electrical source analysis. Two