

Case Study

Resolution of Panic Disorder and Improved Quality of Life in a Patient Receiving Network Spinal Analysis and Somato Respiratory Integration Care: A Case Report

Chris Lucks, BSc, BChiro¹

Lisa Lucks, DC¹

1. Private Practice of
Chiropractic, Auckland, NZ

Abstract

Objective: To present the clinical outcomes of Network Spinal Analysis (NSA) chiropractic care and Somato Respiratory Integration (SRI) exercises in an adult female suffering from anxiety, panic attacks, and comorbid somatic complaints.

Clinical Features: A 49-year-old woman presented to a wellness based chiropractic clinic suffering from anxiety and panic attacks with associated chest pains for a period of eight months with no improvement. The presenting complaints began following a three-year period of prolonged stress. The patient's history revealed past episodes of extreme stress and trauma.

Interventions and Outcomes: A program of Network Spinal Analysis chiropractic care was employed to improve Spinal and Neural Integrity (SNI), including the reduction of Adverse Mechanical Cord Tension (AMCT) and vertebral subluxations. Somato Respiratory Integration exercises were utilized to enhance somatic awareness and provide greater internal safety. AMCT was assessed and measured using a Heel Tension Scale. Quality of life improvements were measured using a self-rated Health, Wellness, and Quality of Life (HWQL) survey. A steady reduction of anxiety and panic attacks was achieved during the first six weeks of care with significant quality of life improvements. Resolution of a panic disorder was achieved within fourteen weeks of care.

Conclusion: Network Spinal Analysis and Somato Respiratory Integration care was associated with the resolution of a panic disorder with significant quality of life improvements in this case. Further research is recommended to explore the role of chiropractic care combined with Somato Respiratory Integration exercises for the management of anxiety disorders and/or other stress related conditions that may be mediated through the spine.

Key Words: Anxiety, panic disorder, stress, vertebral subluxation, chiropractic, Network Spinal Analysis, Somato Respiratory Integration

Introduction

Anxiety disorders involve abnormal feelings of worry or fear that can interfere with daily activities such as job performance, school, work and relationships. There are several different types of anxiety disorders, including generalized anxiety disorder, panic disorder, post-traumatic stress disorder and social anxiety disorder. In the US, anxiety disorders are the most common mental disorder experienced by Americans, affecting over 18% of the adult population.¹ In New Zealand,

anxiety and depressive disorders are the highest ranked conditions in terms of years lost to disability and the second leading cause of health loss overall behind only coronary heart disease.^{2,3} For women they are the leading cause of health loss.³

Panic disorder is a type of chronic anxiety disorder that results in a significant reduction in quality of life. People with panic

disorder experience recurrent unexpected panic attacks with sudden periods of intense fear. Symptoms may include palpitations, pounding heart, or accelerated heart rate; sweating; trembling or shaking; shortness of breath, smothering or choking; and feeling of impending doom.⁴ The majority of people with panic disorder present with one or more comorbid somatic complaints, including: cardiac symptoms (chest pain, tachycardia, irregular heart beat), gastrointestinal symptoms, and neurologic symptoms (headache, vertigo or paresthesias).⁵

Anxiety disorders are conventionally treated with medications, psychotherapy, or a combination of both.⁶ Since the early 1990's pharmacological treatment for anxiety disorders has steadily increased with the introduction of serotonin selective reuptake inhibitors, a type of antidepressant medication.⁷ Serotonin selective reuptake inhibitors are the most common drugs used for the treatment of panic disorders, while cognitive behavioural therapy is considered the psychosocial treatment of choice.^{7,8} Antidepressant prescriptions increased in New Zealand by over 20% in the five years between 2008 and 2013.³

Complementary and alternative medicine (CAM) approaches which are commonly utilized by individuals with anxiety disorders include: homeopathy, natural medicines, acupuncture, chiropractic and various stress reduction and/or relaxation techniques such as yoga, massage and meditation.⁹⁻¹¹

The purpose of this paper is to report on the improvements in a patient suffering from a panic disorder while receiving Network Spinal Analysis (NSA) and Somato Respiratory Integration (SRI) care. The authors propose a relationship between the patient's symptoms of anxiety, panic, and comorbid somatic complaints, and a chronic state of stress physiology mediated through the spine.

Case Report

Patient History

A 49-year-old woman presented to a chiropractic clinic with a chief complaint of anxiety and panic attacks associated with tight, gripping chest pains which began, according to the patient, following three years of financial, work, family and relationship stress. Secondary complaints included gastrointestinal pain and discomfort, mild paresthesia of the arms and hands, tachycardia and headaches. The presenting complaints began approximately eight months prior to presentation for chiropractic care with no improvement during this time.

The patient had previously tried herbal medications for symptom management, including: L-Tyrosine, Chromium, Black Cohosh, and vitamins B6, B9 and B12. Six months prior to presenting for chiropractic care the patient was diagnosed with a panic disorder by her physician and prescribed Citalopram at a dose of 50mg/day. Citalopram is an antidepressant drug of the selective serotonin reuptake inhibitor class commonly used for the treatment of panic disorders. The patient began taking 25mg/day initially with the intention of gradually increasing the dosage to 50mg. After

beginning pharmaceutical treatment the patient reported a reduction in chest pains but an increase in anxiety and panic attacks. She continued with 25mg/day of Citalopram but never increased the dosage.

The patient's history revealed a significant amount of past physical, psychological and emotional trauma. She was struck by a car as a pedestrian and suffered multiple fractures on the right side of her body, including fractures of the phalanges, metatarsals, tibia, fibula, ilium, pubis, ribs, scapula, clavicle, humerus, radius, ulna, carpals and skull. Multiple reconstructive surgeries were required and she had to re-learn to walk again. The patient was robbed at gunpoint on two different occasions and had a gun held to her head both times. During the second incident she was held as a hostage. She later immigrated to New Zealand with her family and experienced a three-year period of financial, work, family and relationship stress.

Examination

The Epstein Model of SNI is one of the models upon which NSA care is based. SNI, which is largely based on the theory of Monohar Panjabi, suggests that there are three spinal stability subsystems which regulate a dynamic state called spinal and neural integrity.¹² The spinal stability subsystems are the passive, active, and neural control subsystems. The passive subsystem is composed of the vertebrae, ligaments, and discs. The active system is composed of the spinal muscles and tendons. The neural control subsystem is composed of the spinal cord, nerve roots, and peripheral nerves, as well as the attachment of the meninges to the vertebral segments.^{12,13} SNI is defined by Epstein as, "that state in which the physical components and physiological processes of the spine are unimpaired, including the body's ability to develop new strategies to maintain an appropriate flow of energy through its tissues."¹⁴ In the Epstein Model of SNI, stress perceived by the body as a threat to survival accounts for a variety of observable somatic and/or visceral changes, including the facilitation of muscles and nerves, postural adaptations, bony fixations and vertebral subluxations.¹⁴

An initial chiropractic examination was performed to assess for SNI using observational and palpation findings for each of the spinal stability subsystems. High passive subsystem tension was noted in the upper cervical spine from Occiput - C2. High passive tension was also noted between C3 - C5, C7 - T1, and T2 - T5. High active subsystem tension was noted from Occiput - C1 bilaterally, and from C3 - C5 on the left. Medium high active subsystem tension was noted from C7 - T4 and T10 - L3 on the left. High neural control subsystem tension was noted bilaterally for both flexion/extension and lateral bending directions through evaluation of passive movement at the ankles, termed heel tension.

The concept of adverse mechanical cord tension (AMCT), originally developed by the work of neurosurgeon Alf Brieg in the 1970's, is associated with a lengthening of the spinal cord in both flexion-extension and lateral bending directions.¹⁵ The NSA protocol characterizes five phases of AMCT associated with patterns of defensive physiology.¹⁴ In NSA clinical assessments, AMCT is considered through heel tension

evaluation while performing leg check protocols involved with NSA care.¹⁴

The overall clinical impression of the patient was extreme stress physiology and hypervigilance with little functional evidence of SNI.

Interventions

The patient was placed on an initial program of NSA and SRI care at a frequency of three visits per week for six weeks, followed by an additional four weeks of care at three visits per week, and then four weeks of care at two visits per week. NSA care is applied through specific low force finger or thumb contacts along the spine. Contacts to the spine involve various graduations of light force in either a vertical or horizontal direction, influencing a flexion/extension or lateral bending response of the spinal structures.¹⁶ NSA is applied through three increasing levels of care that are associated with new emerging properties within the spine and nervous system.¹⁷ Levels one and two of NSA care were used exclusively in this case presentation.

SRI is a system of exercises which link enhanced somatic awareness with respiration and movement.^{18,19} SRI exercises can help a person dissipate energy stored as tension, enhance structural flexibility, and increase the experience of safety within the body.¹⁹ There are twelve SRI exercises associated with The Twelve Stages of Healing.¹⁸ Exercises for stages one, two, and three were used exclusively in this case presentation. A description of how to perform SRI exercises can be found in the Somato Respiratory Integration Workbook, by Donald M. Epstein.¹⁹

The patient was evaluated for indicators contributing to the location and/or characterization of vertebral segments for the application of NSA care contacts according to the NSA protocol (Figure 1). Spinal levels most frequently addressed during the fourteen-week period of NSA care were: Occiput, C1, C2, C5, sacrum and coccyx. Spinal levels addressed less frequently were: C3, C4, C7 and T1.

The stage one SRI exercise was utilized on every visit during the first six weeks of care. The patient was instructed to perform this exercise at home between office visits and she reported doing the exercise daily. Stage two and three SRI exercises were utilized periodically over the course of the fourteen-week period of care in conjunction with NSA.

Outcomes

AMCT was measured in this case using a Heel Tension Scale and graded on a scale of 1 – 5. Heel Tension Scales have been shown through statistical analysis to provide strong intra-examiner reliability and moderate to strong inter-examiner reliability.²⁰ Heel tension measurements for both flexion-extension and lateral bending directions were recorded weekly during the first six weeks of care and then again at weeks 10 and 14. A gradual, steady reduction of AMCT was observed throughout the fourteen week period of care (Table 1).

The patient reported a reduction in anxiety and panic attacks within three weeks of beginning care. After six weeks of care

she reported much less anxiety and a significant reduction in the intensity and frequency of panic attacks and chest pains. She also reported feeling more in control during episodes of panic attacks, and found that she was able to resolve them herself by using the stage one SRI exercise. She reduced her dose of Citalopram down to 12.5mg daily at this time.

After ten weeks of care the patient reported feeling better than ever with no anxiety or panic for two weeks. She reduced her medication to 12.5mg every second day at this time. By fourteen weeks of care she reported a complete resolution of anxiety and panic attacks and all comorbid somatic complaints. She stopped all medication at this time. Three months later the patient reported no further symptoms related to a panic disorder.

Quality of life changes were measured after six weeks of care and again after fourteen weeks of care using a retrospective self-rated Health, Wellness, and Quality of Life (HWQL) survey. The HWQL survey is designed to assess wellness changes through a patients' self-rating of different health domains and overall quality of life at two times points: presently and retrospectively before initiating care.²¹ The HWQL survey has been shown through statistical evaluation to demonstrate a high level of internal reliability as a survey instrument, as well as stable reliability of the retrospective recall method of self-rated perceptions of change.²¹ Significant improvements were found as an outcome of NSA and SRI care across all health domains, with overall quality of life representing the greatest degree of improvement (Table 2).

Discussion

Considerable evidence exists for the relationships between chronic stress, alterations in noradrenergic brain systems, and anxiety.²² Periods of prolonged or chronic stress can cause disturbances of several physiological systems, and the basic survival or 'fight or flight' state can become the baseline function for the individual.^{23,24} The Epstein model of SNI proposes that there is an anchoring of chronic stress physiology within the anatomical structures of the spine.^{25,26} AMCT is believed to be associated with stress physiology and expressed by an individual as defense posture.¹⁴ In NSA care, vertebral subluxations are seen as one of the consequences of this.

NSA contacts use low force in order to initiate the brain to temporarily shift away from defensive adaptations.¹⁴ The application of NSA care results in a reduction in meningeal and/or spinal cord tension through spontaneous motor responses aimed at relieving or re-distributing tension within the spinal stability subsystems.¹⁴ Most notable among these responses is a unique spinal wave phenomenon observed as an emergent property of NSA care which may release the anchors to stress from the spinal system and increase the organization and coherence of the central nervous system.²⁷⁻³¹

SRI exercises may assist in reversing the process of stress physiology and defense posture while promoting greater internal peace or ease.³² SRI can provide acute patients with a tool to help diffuse feelings of fear and encourage trust in their experience of their body.³²

Social cognitive theory states that people who believe they cannot manage threatening events that might occur will experience high levels of anxiety arousal. This perceived coping inefficacy produces high levels of subjective distress, autonomic arousal, and catecholamine secretion.³³ Thus, SRI exercises can play a significant role in helping a patient suffering from anxiety by giving them a greater sense of efficacy over their symptoms while increasing the experience of safety in their body. When utilized in conjunction with NSA care, SRI has been shown to contribute to positive wellness outcomes in 11 patients at an early stage addiction recovery program, and in one patient with a functional movement disorder.^{34,35}

A growing body of evidence exists to support the benefits of subluxation based chiropractic care for anxiety or depressive disorders, and for improved quality of life.³⁶⁻⁴³ In a study of 2,818 patients receiving NSA care, 76% of participants reported statistically significant improvements across all four health domains measured (physical state, mental/emotional state, stress evaluation, life enjoyment), as well as overall quality of life.²¹ Additional research has shown that NSA induces a sympathetic quieting effect.⁴⁴ NSA care has also been demonstrated to have a strong correlative effect (twice that of lifestyle modification) as a predictor of increased quality of life and wellness lifestyle choices.⁴⁵

Previous life stress may sensitize individuals to the development of stress related psychopathology with exposure to subsequent stressors.²² The patient in this case experienced previous episodes of extreme stress and trauma, followed by a three year period of chronic or prolonged stress. Overall, the improvement of SNI, including the reduction of AMCT and vertebral subluxations, coupled with greater internal safety and ease through the utilization of SRI, may account for the positive outcomes in this case.

Other contributing factors to the positive outcome in this case that should be considered are: the patient received care in an environment where she felt safe, trusted the clinicians, and had positive expectations of wellness based outcomes. The patient was also taking selective serotonin reuptake inhibitor medication while receiving NSA and SRI care; therefore a specific correlation between the positive outcomes in this case and NSA and SRI care cannot be made.

It is important to note that NSA and SRI care was not applied as treatment for a panic disorder in this case. NSA and SRI care was applied for the purpose of improving spinal and neural integrity, including the reduction of AMCT and vertebral subluxations, and to promote a shift in the patients' physiology toward greater internal safety and ease.

Conclusion

NSA and SRI care was found to have a significant positive effect on the quality of life of a patient suffering from a panic disorder, and was found to be of clinical benefit for the resolution of anxiety, panic attacks, and comorbid somatic complaints in this case. Subluxation based chiropractic care may provide a significant contribution to the management of patients with anxiety disorders by improving SNI, including the reduction of AMCT and vertebral subluxations. SRI may

provide a significant contribution to the management of patients with anxiety disorders by giving them a greater sense of efficacy over their symptoms and increasing the experience of safety in their body. Further research is recommended to explore the role of subluxation based chiropractic care combined with SRI exercises in the management of anxiety disorders and other stress-related health conditions which may be mediated through the spine.

References

1. National Institute of Mental Health (NIMH). Statistics page. Retrieved from: <http://www.nimh.nih.gov/health/statistics/prevalence/any-anxiety-disorder-among-adults.shtml>
2. Ministry of Health. Report on New Zealand Cost-of-Illness Studies on Long-Term Conditions. 2009. Wellington: Ministry of Health.
3. Mental Health Foundation of New Zealand. Quick Facts and Stats 2014. Retrieved from: <https://www.mentalhealth.org.nz/assets/Uploads/MHF-Quick-facts-and-stats-FINAL.pdf>
4. National Institute of Mental Health (NIHM). Anxiety disorders information page. Retrieved from: <http://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml>
5. Katon W. Panic disorder and somatisation: Review of 55 cases. *The American Journal of Medicine*. 1984;77(1):101-106.
6. Barlow D., et al. Cognitive-Behavioral Therapy, Imipramine, or Their Combination for Panic Disorder. *JAMA*. 2000;283(19):2529-2536.
7. Goisman, R., Warshaw, M., Keller, M. Psychosocial Treatment Prescriptions for Generalized Anxiety Disorder, Panic Disorder, and Social Phobia, 1991-1996. *American Journal of Psychiatry*. 1999;156:1819-1821.
8. Ballenger I.C., et al. Consensus statement on panic disorder from the International Consensus Group on Depression and Anxiety. *Journal of Clinical Psychiatry*. 1998;59(8):47-54.
9. Sparber A., Wootton J.C. Surveys of complementary and alternative medicine: part V. Use of alternative and complementary therapies for psychiatric and neurologic diseases. *J Altern Complement Med*. 2002 Feb;8(1):93-96.
10. Kessler R.C., et al. The use of complementary and alternative therapies to treat anxiety and depression in the United States. *Am J Psychiatry*. 2001 Feb;158(2):289-94.
11. Anxiety and Depression Association of America. Retrieved from: <http://www.adaa.org/finding-help/treatment/complementary-alternative-treatment>
12. Panjabi M. The stabilizing system of the spine, Part 1. Function, dysfunction, adaptation, and enhancement. *Journal of Spinal Disorders* 1992; 5(4):383-389.
13. Epstein D. The Tenets of Network Spinal Analysis and an Overview of the Epstein Models. *Today's Chiropractic*, May/June 2003.
14. Epstein D M. Theoretical Basis and Clinical Application of Network Spinal Analysis (NSA Care), An evidence based document. February 2004 (Revision 12). Longmont CO.

15. Breig A. Adverse Mechanical Tension in the Central Nervous System. (1978; Stockholm, Sweden:Imqvist & Wiksell Int.; New York: John Wiley & Sons) 39-41, 45, 96, 116, 121-123, 129-130, 155.
16. Epstein D. M. Network Spinal Analysis: A System of Health Care Delivery Within the Subluxation-Based Chiropractic Model. *Journal of Vertebral Subluxation Research*, August 1996, 1(1).
17. Epstein D. The Transition of Network Spinal Analysis Care: Hallmarks of a Client-Centered Wellness Education Multi-Component System of Health Care Delivery. *Journal of Vertebral Subluxation Research*, April 5, 2004; 1-7.
18. Epstein D. *The Twelve Stages of Healing: A Network Approach to Wholeness*. Amber-Allen Publishing, 1994.
19. Epstein D. *Somato Respiratory Integration Workbook*. Wise World, 2009.
20. Feeley K., Owens E. Inter and Intra Reliability of Heel Tension Scale. *Annals of Vertebral Subluxation Research*. IRAPS 2014, April 2015.
21. Blanks RHI, Schuster TL, Dobson M. A retrospective assessment of network care using a survey of self-rated health, wellness and quality of life. *J Vertebral Subluxation Research* 1997;1:11-27.
22. Bremner JD, et al. Noradrenergic Mechanisms in Stress and Anxiety: 1. Preclinical Studies. *Synapse*, 1996. 23:28-38.
23. McEwen B.S. and P.J. Gianaros, Central role of the brain in stress and adaptation: links to socioeconomic status, health, and disease. *Annals of the New York Academy of Sciences*, 2010. 1186(1): p. 190-222.
24. Cannon W., The emergency function of the adrenal medulla in pain and the major emotions. *American Journal of Physiology--Legacy Content*, 1914. 33(2): p. 356-372.
25. Epstein D., The spinal meningeal functional unit tension and stress adaptation. *Digest of Chiropractic Economics*, 1986. 29(3):58-60.
26. Epstein D., The stress connection: Gauging the role of the nervous system. *Digest of Chiropractic Economics*, 1987. Dec/Jan:58-60.
27. Jonckheere E, Bohacek S, Lohsoonthorn P. Dynamic modelling of spinal EMG activity. NSF Southwest Regional Workshop on New Directions in Dynamical Systems, University of Southern California, Los Angeles, November 16-19, 2000.
28. Jonckheere E, Lohsoonthorn P, Boone WR. Dynamic modelling of spinal electromyographic activity during various conditions [Session WA-13-3, Biomedical Applications]. *American Control Conference*, Denver, CO June 4-6, 2003.
29. Hiebert A, Jonckheere E, Lohsoonthorn P, et al. Visualization of a stationary CPG-revealing spinal wave [poster presentation]. *Medicine Meets Virtual Reality*, Long Beach, CA, January 24-27, 2006 [published in: Westwood J, ed. *Medicine Meets Virtual Reality-14: Accelerating Change in Healthcare: Next Medical Toolkit*. Amsterdam: IOS Press 2006;119:198-200.]
30. Jonckheere, E. (2009). Network Spinal Analysis. *Journal of Alternative and Complimentary Medicine*. 15(5), 469-470.
31. Martin del Campo R, Jonckheere E. Global SIP 2015 — Symposium on Signal Processing and Mathematical Modeling of Biological Processes with Applications to Cyber-Physical Systems for Precise Medicine. Orlando, Florida, USA December 14-16 2015.
32. Epstein D. Somato Respiratory Integration Exercises: to Relieve Stress. *The American Chiropractor*, 2005, 27(5).
33. Bandura A. Self-efficacy Conception of Anxiety. *Anxiety Research*, 1988: 1(2), 77-98.
34. Smorra D. Pilot Study, Results of Reorganizational Healing Meta Model Applied to Adult Females During In-Residence Addiction Recovery. *Annals of Vertebral Subluxation Research*. IRAPS 2014, April 2015.
35. Lucks C., Lucks L. Improvement of a Functional Movement Disorder in a Patient Receiving Network Spinal Analysis and Somato Respiratory Integration Care: A Case Report. *Annals of Vertebral Subluxation Research*. April 9, 2015, 26-33.
36. Roth L, et al. Upper cervical Chiropractic Care as a Complementary Strategy for Depression and Anxiety: A Prospective Case Series Analysis. *Journal of Upper Cervical Chiropractic Research*- June 20, 2013:49-54.
37. Prater-Manor S., Clifton E., York A. Resolution of Anxiety and Hypertension in a 60 Year Old Male Following Subluxation Based Chiropractic Care: A Case Study and Review of the Literature. *Annals of Vertebral Subluxation Research* – Aug. 3, 2015:146-153.
38. Behrendt M., Olsen N., The Impact of Subluxation Correction On Mental Health: Reduction of Anxiety in a Female Patient Under Chiropractic Care. *Journal of Vertebral Subluxation Research*. Sept. 20, 2004:1-10.
39. Teytelbaum M. Improvement in Symptoms Related to Depression, Anxiety, and Pain in a Patient Undergoing Subluxation Based Chiropractic Care. *Annals of Vertebral Subluxation Research* – Aug 29, 2011(3):84-91.
40. Russell D. Improvement in Mobility, Emotional Wellbeing, and Quality of Life in an Older Adult Following Subluxation Based Chiropractic Care: A Case Report. *Annals of Vertebral Subluxation Research* – September 17, 2015:157-162.
41. Knowles D, Knowles R, Burnier B. Reorganization of the Cervical Curve & Improved Quality of Life Following Network Spinal Analysis Care: A Case Study. *Annals of Vertebral Subluxation Research*. December 7, 2015. pp 217-225.
42. Feeley K, Kemp A. Improvement in Meniere's Disease, Balance, Coordination and Quality of Life Following Network Spinal Analysis Care. *Annals of Vertebral Subluxation Research*. November 25, 2013. pp 107-119
43. Pauli Y. Quality of Life Improvements and Spontaneous Lifestyle Changes in a Patient Undergoing Subluxation-Centered Chiropractic Care: A Case Study. *Journal of Vertebral Subluxation Research*, October 11, 2006; 1-15.
44. Miller E, Redmond P. Changes in Digital Skin Temperature, Surface Electromyography, and Electrodermal Activity in Subjects Receiving Network Spinal Analysis Care. *Journal of Vertebral Subluxation Research*, June 1998; 2(2): 87-95.
45. Schuster TL, Dobson M, Jauregui M, Blanks RH. Wellness lifestyles II: Modeling the dynamic of wellness, health lifestyle practices, and Network Spinal Analysis. *Journal of Alternative and Complimentary Medicine*. April 2004;10(2):357-67.

Figure 1: NSA indicators contributing to the location and/or characterization of vertebral segments for entrainment

Certain musculoskeletal changes are considered to be indicators of the effects of AMCT. This is a list of these indicators and the spinal phenomena with which they are associated. These include both observational and palpation findings. For the significance and priority of the adjustment protocol, refer to The Theoretical Basis and Clinical Application of NSA Care (Epstein 2004).

Indicator	Segmental Level Assessed
Short Leg	Unilateral cord tension
Cervical Syndrome Test	Tension in cervical spinal cord
Leg Crossover	sacral or pelvic distortion
Ankle Eversion Stress	Lateral flexion cord tension
Flexion/Extension Heel Tension	Flexion/extension cord tension
Z-flick	C2, C3 lateral bending cord tension
Leg Adduction Stress	C2, C3 spinal cord tension
Leg Abduction Stress	C5, coccyx (F/E) spinal cord tension
Palpation (motion, static, muscular)	all vertebral segments
Sacroteruberous ligament tension	lateral bending sacrum
Postural analysis	all vertebral segments
Flexibility (Range of Motion)	all vertebral segments

**Positive indicators contributing to the location and/or characterization of vertebral segments for entrainment are assessed pre and post entrainment to determine efficacy of the force applied

Table 1 – Heel Tension Evaluation

Exam Dates	Initial Exam		week 1		week 2		week 3		week 4		week 5		week 6		week 10		week 14		
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	
Achilles Tendon																			
Heel Tension (F/E)	5	5	5	5	5	4	4	4	4	4	4	4	3	3	3	3	3	2	
Ankle Eversion Stress (L/B)	5	5	5	5	5	5	5	4	5	4	4	4	4	4	4	3	3	3	

Heel Tension Scale: 1 – Low; 2 – Med-Low; 3 – Medium; 4 – Med-High; 5 – High

Table 2 –self-rated Health, Wellness, and Quality of Life Survey

HEALTH DOMAIN	Scale from lowest to highest rating	Before Care	6 weeks of care	14 weeks of care	Total change
Physical State (decreased rating = improvement)	50 - 0	25	20	21	-4
Mental/Emotional State (decreased rating = improvement)	50 - 0	30	21	23	-7
Stress Evaluation (decreased rating = improvement)	50 - 0	43	20	16	-27
Life Enjoyment (increased rating = improvement)	0 - 55	28	43	42	+14
Overall Quality of Life (increased rating = improvement)	0 - 98	56	80	86	+32