

# Clinical Study

## Immediate Neurological Improvement Following Subluxation Based Chiropractic Care

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### Abstract

**Objective:** To measure the immediate neurological effects of subluxation based chiropractic care.

**Clinical Features:** A 26-year-old male patient was evaluated with thermal instrumentation before and after vertebral subluxations were detected and adjusted.

**Intervention and Outcomes:** Torque Release Technique® protocol was utilized for both evaluation and application of care. Low-force adjustments were performed with an FDA approved instrument (the Integrator) for reducing vertebral subluxations. These changes were measured with spinal thermography.

**Conclusions:** After applying subluxation based chiropractic via Torque Release Technique®, the patient showed immediate improvement in neurological function. These results were measured with pre- and post- adjustment thermal scans. The decreased asymmetry in thermal readings demonstrates that reducing subluxations immediately improved neurological function.

**Key Words:** *Chiropractic, Torque Release Technique® (TRT), Integrator, Vertebral Subluxation, Thermography*

### Introduction

Subluxation based chiropractic is the reduction of vertebral subluxation allowing the brain to effectively communicate with the rest of the body creating improved overall nervous system balance.<sup>1</sup>

Technology has allowed us to monitor the immediate correction of these subluxations and their effect on the nervous system. Thermal evaluation dates back to the time of Hippocrates; since then modern medicine has incorporated the use of thermography as a tool for the evaluation of a patient's health status.<sup>1-3</sup> In chiropractic, thermal evaluation of paraspinal skin temperature has been in use since 1924.<sup>2,3</sup>

Surface skin temperature measurements, which attempt to differentiate between contralateral spinal segments, have been used extensively to identify somato-tropic anomalies.<sup>4</sup> Several studies using thermal recordings of the skin surface have shown that there are temperature gradients along the length of the spine.<sup>4</sup> In addition, it has been hypothesized that

hemispinal contralateral temperature differences may be indicative of somatospinal inconsistencies requiring a chiropractic intervention.<sup>4</sup>

Thermal evaluation of paraspinal temperature gives us the ability to objectively measure the nervous system both before and after a chiropractic intervention. This data is not subjective but an objective measure of the nervous system and its change immediately following an adjustment.

It is theorized that a nervous system without interference (subluxation) allows for greater fulfillment of human potential and state of well-being.<sup>5</sup> The reason for this case study is to demonstrate the ability of the nervous system to immediately adapt with a low force chiropractic technique. In establishing this, the applied chiropractic care and how it can immediately improve the nervous system to its proper function will be discussed.

## Case Report

### *History & Examination*

A 26-year-old male presented for a chiropractic evaluation. He did not have any complaints or symptoms at the time of presentation.

### *Interventions & Outcomes*

Thermal scan analysis using the Insight 7000 was performed for initial subluxation analysis. Thermography was recorded immediately before the chiropractic intervention and showed inequalities of para-spinal radiant heat differentials. (See Figure 1) The scan showed severe heat variances at vertebral levels C2, C4, and C5 up to 2.7 degrees Fahrenheit. A mild variance of up to 0.8 degrees Fahrenheit was revealed at T5, T6, T10, T11, and T12. The patient was then checked for subluxations with TRT protocol. A coccyx/sphenoid subluxation was detected and corrected with the Integrator.

He was re-scanned with the Insight 7000 and the scan showed immediate improvement. The scan showed a swing of 2.6 degrees Fahrenheit at C3 alone and at T9 and T10 of up to 0.8 degrees Fahrenheit. The patient was rechecked for subluxations in which a right lateral C1 (ASR) presented and was then adjusted.

Immediately after the adjustment, he was checked again for subluxation. A right lateral occiput (PS-RS-RP) was then detected and corrected. Immediately following that adjustment he was re-scanned for thermal asymmetry. The scan showed marked improvement over both previous scans with only a moderate temperature differential of 1.2 degrees Fahrenheit at C1 with all other spinal segments being within the normal range.

This entire chiropractic intervention was performed on the same day. The thermal scans were completed within 30 seconds of the chiropractic adjustments.

### **Discussion**

The Insight 7000 thermal scan was first used in the examination of the patient. Thermal scans use infrared technology to measure heat emission given off from the surface of the skin. The differences in peripheral skin temperature has been shown to be a correlate of changes in peripheral vasoconstriction associated with the sympathetic nervous system.<sup>6</sup>

Thus, tissues tend to warm and cool as the immediate vascular bed below the skin constricts and dilates.<sup>6</sup> This relationship is based on the physiological ramifications of vasoconstriction and vasodilation of paraspinal tissues.<sup>6,7</sup> Changes seen in thermal scans, when properly done, not only show high inter- and intra-examiner reliability, but changes seen are also most likely due to actual physiological changes rather than equipment error.<sup>8</sup>

The physiological changes that directly relate the sympathetic nervous system changes in response to an adjustment of a vertebral subluxation are continually being researched and

tracked through paraspinal thermography.<sup>8,9</sup>

Torque Release Technique® (TRT) was developed by Dr. Jay M. Holder in order to conduct a subluxation based research study on the greater fulfillment of human potential and state of well-being.<sup>5</sup> This study was a randomized placebo controlled study that revealed that chiropractic care as a part of an addiction treatment program can show benefits beyond musculoskeletal complaints.<sup>5,10</sup> Addicted subjects were chosen because they best represent those persons suffering from Reward Deficiency Syndrome (a lack of the state of well-being) and its relationship to the Brain Reward Cascade.<sup>5</sup>

This relationship has been effective in providing a better understanding as to one's ability to obtain one's potential in such areas as satisfaction and state of wellbeing. This potential is reached through a "reward cascade" of neuropeptides found in the limbic system throughout the spinal cord as suggested by Holder and Blum.<sup>10</sup> Only vertebrates have this opiate receptor brain reward cascade that can express a state of wellbeing; as long as there is not any interference (subluxation) in the spine.<sup>10</sup> Meaning that one would need a subluxation free spine in order for the limbic system to function at its greatest potential.<sup>10</sup>

In the research study done by Holder on the greater fulfillment of human potential and state of wellbeing, there were three groups. Group one received standard addiction treatment including group therapy, psychotherapy, and medical care. Group two received the same addiction treatment but was also provided subluxation-based chiropractic adjustments using the Torque Release Technique® delivered via the use of the Integrator adjusting instrument.<sup>5</sup> Group Three was the placebo group which received the same addiction treatment performed in Group one and two, but was also provided placebo chiropractic adjustments by modifying the Integrator to fire without any force or frequency characteristics.<sup>5</sup>

Group one had a 56% retention rate, group three (placebo) had a 75% retention rate and group two had a 100% retention rate in the 30 day addiction treatment model.<sup>5,10</sup> Group two also made fewer visits to the nurse's station and showed statistically significant decreases in anxiety, a leading cause of relapse in addicts, using the Spielberger State Anxiety Inventory.<sup>5</sup>

Lastly, Beck's Depression Inventory revealed that chiropractic care lowered depression levels below a score of 5 in 4 weeks, a feat which usually takes one year of medication and psychotherapy to achieve.<sup>5</sup> The study clearly showed a strong association between chiropractic care and significant improvement in state of wellbeing and greater fulfillment in human potential.<sup>5</sup>

Torque Release Technique® embraces a vitalistic paradigm, specifically relating to tone and the premise on which D.D. Palmer originally founded chiropractic.<sup>11</sup> In more recent literature, excessive cord tension has been described as a source of motor, sensory, and autonomic dysfunction.<sup>12</sup> TRT combines aspects of many other chiropractic techniques, some of which are the works of Palmer (Upper Cervical), Van Rump (Directional Non-Force Technique), DeJarnette (Sacro-Occipital Technique), Toftness, Thompson,

Gonstead, Logan, Pierce, and Epstein (Network Spinal Analysis).<sup>13</sup> Within this chiropractic model, 15 indicators are used in order to find the primary subluxation, that subluxation on which all other subluxations are dependent for existence. These subluxations cause the greatest insult to nervous system interference due to the dural attachments to bone.<sup>13</sup>

The dura mater, the membrane which envelops the brain and spinal cord, adheres to the bone at multiple points in the spine.<sup>13</sup> These points include the cranium and around the circumference of the foramen magnum at the base of the occiput, and peculiarly adheres to spinal segments of the axis and C5 at the cephalic end, and to the sacrum and coccyx, at the caudal end.<sup>11</sup> There is no other adherence to osseous structures throughout the spine.<sup>13</sup>

In order to be specific and reliable, the Integrator was used for the correction of the vertebral subluxations of this patient. The integrator is an FDA approved hand held instrument that was designed for delivering a chiropractic adjustment.<sup>13</sup> The Integrator brings speed, recoil, and a three-dimensional approach to chiropractic. The speed of the integrator is at 1/10,000 of a second and recoils to allow for a greater thrust outcome with less force. The torque component allows for the Integrator to remove all three vectors of a subluxation in one dynamic thrust.<sup>5</sup> Lastly, the Integrator has a pre-cocking pressure sensitive tip with an automatic release mechanism for the purpose of true inter-professional reproducibility.<sup>13</sup>

In order to locate and confirm where the primary subluxation is, a functional leg length inequality is performed. The functional short leg is used to help locate the subluxation in need of correction. Functional leg length inequality is thought to be the result of physiological adaptations to distorted biomechanics along the kinetic chain, such as asymmetric muscle contraction or bony misalignment.<sup>14,15</sup> In combination with the TRT indicators, a pressure test is used to confirm the line of correction for the adjustment.

The pressure test is a skin-deep push of the doctor's finger in the line of correction of the subluxation. This vector is applied to temporarily reduce the positional misalignment or dynamic dyskinesia of a vertebral joint. With a pressure test, the leg-length inequality is expected to balance.<sup>16</sup> When the legs perfectly balance using the functional leg length inequality and the pressure test; it confirms our primary subluxation and the vectors needed for correction.

It has been shown that in as early as 1-3 months of care, physical state, mental/emotional state, stress evaluation and life enjoyment have all shown improvement during chiropractic care.<sup>17</sup> These clinical improvements have shown benefit throughout long durations of care with no indication of a maximum clinical benefit.<sup>17</sup> This suggests that chiropractic could be beneficial regardless of a person's clinical diagnoses or symptomatology.

The question is, are pain free individuals subluxated and do they need chiropractic care. A study presented that cutaneous temperature monitoring throughout the entire treatment course for patients initially in pain to the later part of the treatment when patients are pain free, but still subluxated, may indicate

the possible need for care without the presence of pain while providing the diagnostic clues to pursue treatment.<sup>18,19</sup> This is important to understand in the context of continued care and ability to pursue greater fulfillment of human potential and state of well-being.<sup>5</sup>

## Conclusion

This study outlines the direct and immediate effect of subluxation based chiropractic on the nervous system in a 26-year-old male exhibiting no pain or symptoms. Pre and post para-spinal thermography exhibited this change with low force adjustments. The critically decreased asymmetry in thermal readings demonstrates that reducing subluxations immediately decreases neurological dysfunction without over stimulation to the sympathetic nervous system as seen in high force adjustments. This study suggests that chiropractic has immediate effects on the nervous system. More research is needed to fully evaluate the role of thermal scanning in the management of vertebral subluxation.

## References

1. Wallace H, Wallace J, Resh R. Advances in paraspinal thermographic analysis. *Chiropr Res J* 1993;2:39-55.
2. Leach RA. The chiropractic theories—a textbook of scientific research. 4th ed. Baltimore (Md)7 Lippincott, Williams & Wilkins; 2004. p. 186-7.
3. Kent C, Daniels J. Chiropractic thermography: a preliminary report. *ICA Int Rev Chiropr* 1974;20-3.
4. McCoy M. Paraspinal Thermography in the Analysis and Management of Vertebral Subluxation: A Review of the Literature. *Annals of Vertebral Subluxation Research*. July 14, 2011. Pages 57-66
5. Holder JM. Chiropractic Research Earns International Prestige: Chiropractic care and state of well-being. *Can Chiropr* 2001; 6: 22-23.
6. Miller E, Redmond P. Changes in digital skin temperature, surface electromyography, and electrodermal activity in subjects receiving network spinal analysis care. *J of Vert Sublux Res*. 1998; 2: 2-3.
7. Uematsu S, Edwin DH, Jankel WR, Kozikowski J, Trattner M. Quantification of thermal asymmetry. Part 1: Normal values and reproducibility. *J Neurosurg*. 1988 Oct;69(4):552-5.
8. Owens E, Hart J, Donofrio J, Haralambous J, Mierzejewski E. Paraspinal skin temperature patterns: An interexaminer and intraexaminer reliability study. *J of Manipulative and Physiol Ther* 2004; 27: 156.
9. McCoy M, Campbell I, Stone P, Fedorchuk C, Wijayawardana S, et al. 2011 Intra-examiner and inter-examiner reproducibility of paraspinal thermography. *PLoS ONE* 6(2): e16535. doi:10.1371/journal.pone.0016535.

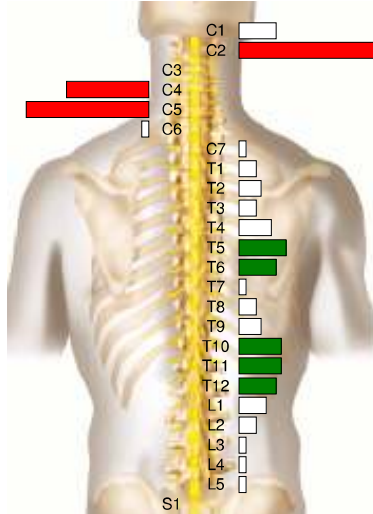
10. Blum K, Braverman E, Holder JM, Lubar JF, Monastra VJ, Miller D, Lubar JO, Chen TJ, Comings DE. Reward deficiency syndrome: A biogenic model for the diagnosis and treatment of impulsive, addictive, and compulsive disorders. *J Psychoactive Drugs* 2000; 32: 768, 770.
11. Palmer DD. *The Chiropractor's Adjuster*. Portland: Portland Printing Co, 1910: 1.
12. Breig A. *Adverse Mechanical Tension in the Central Nervous System*. New York: John Wiley & Sons, 1978.
13. Nadler A, Holder JM, Talsky M. Torque Release Technique: A technique model for chiropractic's second century. *Can Chiropr* 1998; 3: N<sup>o</sup>1.
14. Holt, K, Russell D, Hoffmann N, Bruce B, Bushell P, Taylor H. Interexaminer reliability of a leg length analysis procedure among novice and experienced practitioners. *J of Manipulative Physiol Ther* 2009; 32: 216-217.
15. Schneider M, Homonai R, Moreland B, Delitto A. Interexaminer reliability of the prone leg length analysis procedure. *J Manipulative Physiol Ther* 2007; 30: 514-521.
16. Fuhr A, Menke M. Status of Activator Methods Chiropractic Technique, Theory, and Practice. *J Manipulative and Physiol Ther* 2005; 28: 135-136.
17. Blanks R, Schuster T, Dobson M. A retrospective assessment of network care using a survey of self-rated health, wellness and quality of life. *J of Vert Sublux Res*. 1997; 1: 1.
18. Miller E, Redmond P. Changes in digital skin temperature, surface electromyography, and electrodermal activity in subjects receiving network spinal analysis care. *J of Vert Sublux Res*. 1998; 2: 2-3.
19. Richard R, Boucher J, Comtois A. Paraspinal cutaneous temperature modification after spinal manipulation at L5. *J of Manipulative and Physiol Ther* 2010; 33: 308-313.

# Figures

Rolling Thermal Scan NCM Bar Graph on (07/19/2011 12:06 PM)  
6 degrees Fahrenheit

+1 +2 +3

0.0  
1.6  
2.4  
0.1



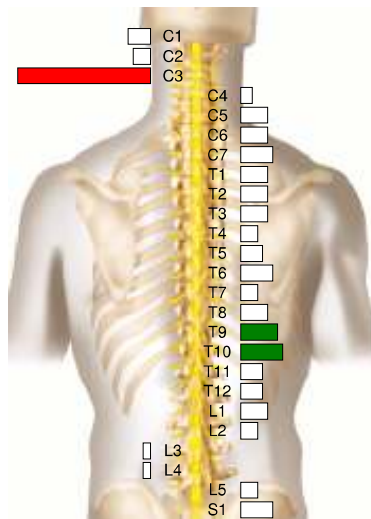
0.7  
2.7  
  
0.1  
0.3  
0.4  
0.3  
0.6  
0.9  
0.7  
0.1  
0.3  
0.4  
0.8  
0.8  
0.7  
0.5  
0.3  
0.1  
0.1

**Figure 1. Initial Thermal Scan.** The scan showed severe heat variances at vertebral levels C2, C4, and C5 up to a 2.7 degrees Fahrenheit. A mild variance of up to 0.8 degrees Fahrenheit was revealed at T5, T6, T10, T11, and T12.

Rolling Thermal Scan NCM Bar Graph on (07/19/2011 12:18 PM)  
6 degrees Fahrenheit

+1 +2 +3

0.4  
0.3  
2.6

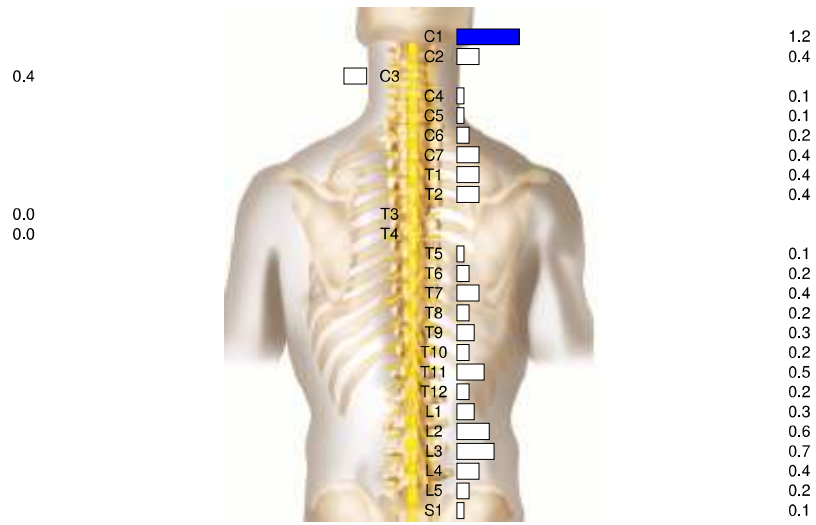


0.2  
0.5  
0.5  
0.6  
0.5  
0.5  
0.5  
0.3  
0.4  
0.6  
0.3  
0.5  
0.7  
0.8  
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0.6

**Figure 2. Second Thermal Scan immediately after first adjustment.** The scan showed a swing of 2.6 degrees Fahrenheit at C3 alone and at T9 and T10 of up to 0.8 degrees Fahrenheit.

Rolling Thermal Scan NCM Bar Graph on (07/19/2011 12:31 PM)  
6 degrees Farenheit

+1 +2 +3



**Figure 3. Post Thermal Scan.** The scan shows improvement after right lateral C1 and Occiput adjustments.