

## An Introduction to Upper Cervical Technique (Hole-in-One) \*

By  
John Hart, DC, MHSc  
Private Practice  
Greenville, South Carolina



\* Adapted from the author's presentation on this topic at the National Subluxation Conference, held at Life-West Chiropractic College, Dec 7-8, 2002



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## Overview

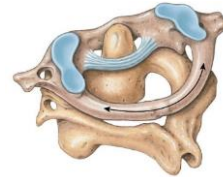


Image from: easynotecards.com



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- Introduced as a technique In 1930 by B.J. Palmer
- First called hole-in-one (HIO)
- 1946 re-named upper cervical specific (1).

### Reference

1. A new era for PSC. International Review of Chiropractic. February 1956, p. 4.



3



4



## Later text books

- Remier PA. Modern X-ray Practice and Spinography. The Palmer School of Chiropractic. Davenport, IA, 1957, pp. 312-378.
- Remier PA. System of spinographic analysis. In: Palmer BJ. Answers. W.B. Conkey Co. Hammond, Indiana. 1952, pp. 1-25.
- Remier PA. Spinographic analysis. International Review of Chiropractic (ICA). February 1955, pp. 7-8, 32.
- Remier PA. Analysing the axis and atlas. International Review of Chiropractic (ICA). August 1955, pp. 6-10, 29.

5

## More recent publications



- Bolton PS, Bolton SP. Acute cervical torticollis and Palmer upper cervical specific technique: a report of three cases. Chiropractic Journal of Australia 1996;26(3):89-93. and
- Amalu W, Tiscareno LH. HIO: old problems, new solutions. Today's Chiropractic 1997;26(6):24-34).
- Hyman C. The Upper Cervical Technique. Enchantment Publishing. 1996.
- Strazewski J. The Essentials of Toggle Recoil. 1998.



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## Analysis



- Paraspinal thermal pattern analysis
- Leg length inequality assessment
- Upper cervical x-ray

## Adjustment



- Consists of toggle-recoil
  - Side-posture
  - Knee-chest position.



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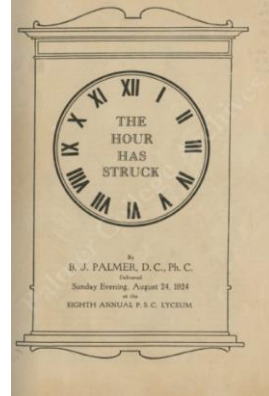


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## History



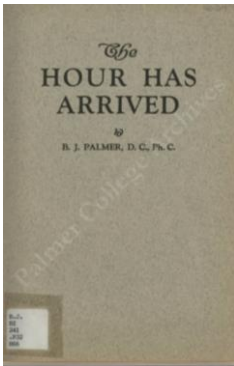
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Courtesy Palmer College Archives



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Courtesy Palmer College Archives

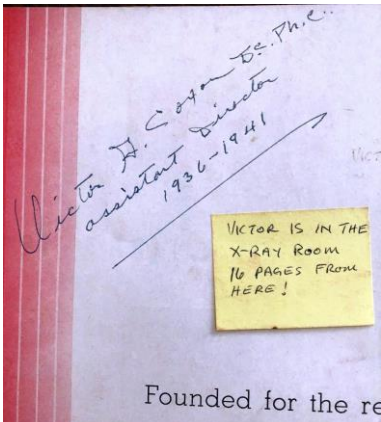


Video of BJ Palmer providing UC care:

<https://www.youtube.com/watch?v=1zfZM3QpGY8>



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Courtesy Palmer College Archives

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## ANOTHER BABY

Courtesy Palmer College Archives

**By V. G. COXON, D.C., Ph.C.**  
Assistant Director of The B. J. Palmer Chiropractic Clinic

LAST month I discussed the baby with one deaf ear who regained hearing in less than two weeks with one adjustment of the atlas vertebra, the uppermost segment in the spine.

Two weeks ago another baby entered The B. J. Palmer Chiropractic Clinic with a paralyzed leg. Baby was ten months old. Two or three months ago the parents noticed the baby did not use its right leg in trying to creep. It was cold continuously and hung limp; the child was very restless at night, due, no doubt, to discomfort in the leg.

Upon entrance to the clinic we made X-rays and other

that we are filling a niche of usefulness in the world. THAT makes life worth living.


**We Are Not Alone**

As I pointed out in my last article, other Chiropractors throughout the world are rendering a competent service and securing fine results. I received several letters after my last article telling me of truly marvelous results obtained with babies by Chiropractors in different parts of the country. Full credit goes to them for doing a good work.

of results with a good many otherwise r methods.

Like any of Chiropractic especially in methods of been developed acting and s we are able to we did with therefore, it tor to invest to apply the is why ever two and the return to TI practice to at ing and Res practors rec search and if Chiropractic

IN caring for children, Chiropractors have done wonders for those having difficulty with school work and who are considered backward. Results in this particular phase of work have been exceptionally fine, and yet, none of these results have been compiled for the use of Educators



V. G. COXON, D.C., Ph.C.



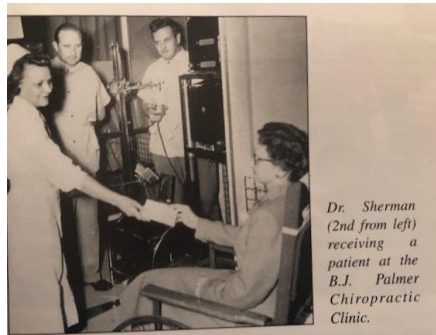
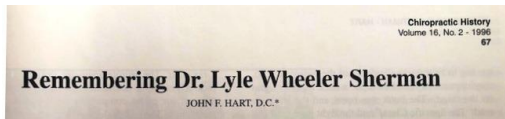
Courtesy Palmer College Archives

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Courtesy Palmer College Archives

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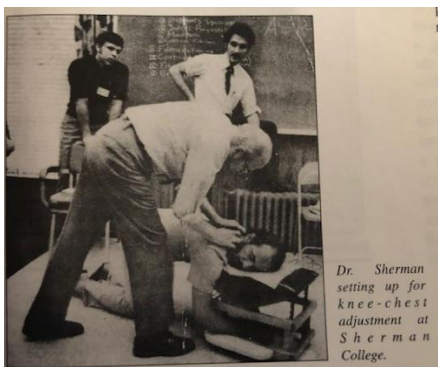


Dr. Sherman (2nd from left) receiving a patient at the B.J. Palmer Chiropractic Clinic.



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Dr. Sherman setting up for knee-chest adjustment at Sherman College.

### Analysis: Instrumentation



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The first chiropractic temperature instrument – the neurocalometer, 1924, PSC.

Courtesy Palmer College Archives

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From: myovision.com

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# Chirometer



## Correlation Between Atlas Fossa Temperature Difference and the Blair Upper Cervical Atlas Misalignment

Journal of Upper Cervical Chiropractic Research, Volume 2016

Todd Hubbard M.S., D.C. & Kali Gillen D.C.

Journal of Upper Cervical Chiropractic Research - January 25, 2016 - Pages 1-5

**Conclusion:** This study found a poor correlation between the AFTD and the laterality of the atlas misalignment seen on the Blair radiograph.

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Courtesy Palmer College Archives



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From pickclick.ca

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Nervoscope



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Analograph



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JNS JOURNAL OF NEUROSURGERY  
OFFICIAL JOURNALS OF THE AANS SINCE 1944

Oct 1988

HOME BROWSE FOR AUTHC

ABSTRACT

✓ The use of thermography in evaluating nerve injury is based on the presence of temperature asymmetries between the involved area of innervation and the corresponding area on the opposite side of the body. However, interpretation of the thermographic image has been troubled by subjectivity. This paper describes a computer-calculated method of collecting data that eliminates subjective biases. Comprehensive normative data are presented on the degree of thermal asymmetry in the human body.

The degree of thermal asymmetry between opposite sides of the body ( $\Delta T$ ) is very small. For example, the value of  $\Delta T$  for the forehead (mean  $\pm$  standard deviation) was  $0.38^\circ \pm 0.19^\circ\text{C}$ , for the leg it was  $0.27^\circ \pm 0.2^\circ\text{C}$ , and for the foot it was  $0.38^\circ \pm 0.37^\circ\text{C}$ . These values were reproducible in both short- and long-term follow-up measurements over a period of 5 years. The  $\Delta T$ 's reported here were obtained from 40 matched regions of the body surface of 90 asymptomatic normal individuals. These values can be used as a standard in assessment of sympathetic nerve function, and the degree of asymmetry is a quantifiable indicator of dysfunction.

F:  $92.5 - 92.3 = 0.2$   
C:  $33.6 - 33.5 = 0.1$

F:  $92.5 - 92.2 = 0.3$   
C:  $33.6 - 33.4 = 0.2$



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Tytron



From: <http://chiropractorvictoria.com/wp-content/uploads/2011/05/thermal-scan-on-patient1.jpg>

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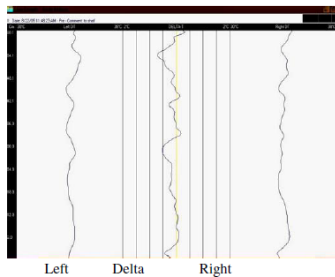
Figure 1 TyTron scanning procedure.



From Hart et al, JCCA 2007

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Figure 2 TyTron scan results before being imported to the TPC software.\*



From Hart et al, JCCA 2007

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**ASSESSMENT**

# Pattern Analysis of Paraspinal Temperatures: A Descriptive Report

*John Hart, D.C.,<sup>1</sup> and William R. Boone, Ph.D., D.C.<sup>2</sup>*

J. Vertebral Subluxation Res., 3(4), 1999-2000

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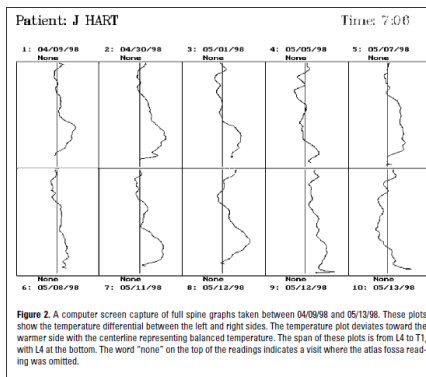


Figure 2. A computer screen capture of full spine graphs taken between 04/09/98 and 05/13/98. These plots show the temperature differential between the left and right sides. The temperature plot deviates toward the warmer side with the centerline representing balanced temperature. The span of these plots is from L4 to T1, with L4 at the bottom. The word "none" on the top of the readings indicates a visit where the atlas fossa reading was omitted.

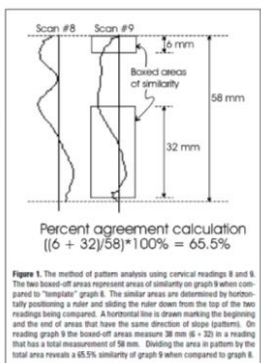
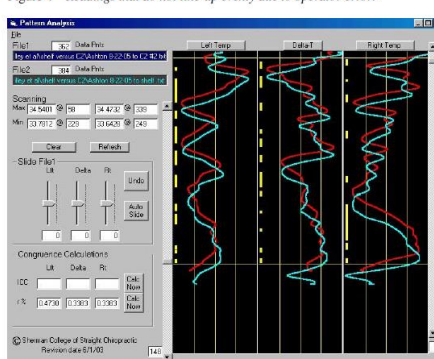


Figure 3. The method of pattern analysis using cervical readings #8 and #9. The two boxed-off areas represent areas of similarity on graph #9 when compared to "template" graph #8. The similar areas are determined by horizontally positioning a ruler and sliding the ruler down from the top of the two readings being compared. A horizontal line is drawn marking the beginning and the end of areas that have the same direction of slope (up/down). On reading graph #9 the boxed-off areas measure 38 mm (6 + 32) in a reading that has a total measurement of 58 mm. Dividing the area in pattern by the total area reveals a 65.5% similarity of graph #9 when compared to graph #8.

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Figure 4 Readings that do not line-up evenly due to operator error.\*



From Hart et al, JCCA 2007

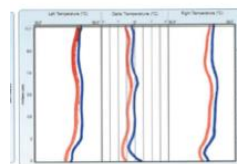
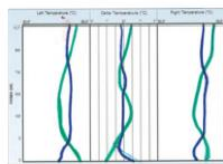


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## Inter-examiner reliability of the interpretation of paraspinal thermographic pattern analysis

Barbara A. Mansholt, DC, MS<sup>1</sup>  
Robert D. Vining, DC<sup>2</sup>  
Cynthia R. Long, PhD<sup>3</sup>  
Christine M. Goertz, DC, PhD<sup>4</sup>

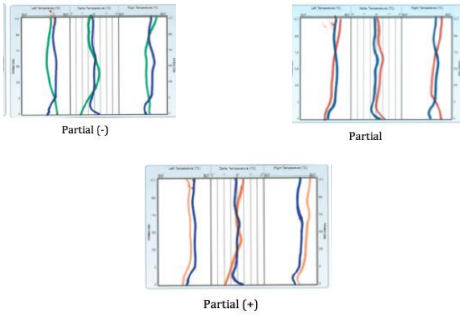
JCCA 2015; 59(2)



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1. Pattern: 3 lines are the same
2. Partial (+): 2 lines are the same and the 3<sup>rd</sup> line is similar
3. Partial: 2 lines are the same
4. Partial (-): 1 line is the same
5. Adaptation: 3 lines are different



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Journal of Chiropractic Medicine (2011) 18, 70–73



### Standard deviation analysis of the mastoid fossa temperature differential reading: a potential model for objective chiropractic assessment

John Hart DC, MHSc\*

Assistant Director of Research, Sherman College of Chiropractic, Spartanburg, SC 29304

Received 2 June 2010; received in revised form 8 September 2010; accepted 21 October 2010

### Original Research

#### Intra-Examiner Repeatability of Mastoid Fossa Temperature Differentials using the Tytron Instrument

John Hart, DC, MHSc<sup>1</sup>  
 Claudia Seay, BS, DC<sup>2</sup>  
 Cindy Gibbon, DC<sup>2</sup>

1. Assistant Director of Research, Sherman College of Chiropractic, Spartanburg, SC
2. Professor, Sherman College of Chiropractic, Spartanburg, SC

#### Abstract

**Introduction:** Mastoid fossa temperature differentials (MFD) are used to analyze a neurological component of the vertebral subluxation. Its repeatability was studied using a chiropractic temperature instrument.

**Methods:** Three examiners twice scanned 28 relatively healthy volunteers using the C-3000 Tytron instrument. A 90<sup>th</sup> percentile was calculated for absolute temperature differences (in Celsius) between the two trials for MFD by examiner. As an example, a 90<sup>th</sup> percentile of 0.50 degrees for an examiner means that 90 percent of his or her absolute MFDs were at or below 0.50 degrees.

**Results:** The 90<sup>th</sup> percentiles by examiner were as follows: Examiner A: 0.35 degrees; Examiner B: 0.84 degrees; Examiner C: 1.44 degrees.



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### Annals of Vertebral Subluxation Research



Fig 1. Obtaining a temperature measurement in the mastoid fossa.

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### Thermofocus



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### Analysis: X-ray



- AP open mouth
- Base posterior
- Lateral neutral



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### Atlas



- Compared to occipital condyles
  - Lateral view: Tilt
  - A-P Open Mouth view: Mainly for laterality and secondarily for rotation
  - Base Posterior view: Mainly for rotation and secondarily for laterality



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### 12 Atlas listings



|     |      |      |
|-----|------|------|
| ASL | ASLA | ASLP |
| ASR | ASRA | ASRP |
| AIL | AILA | AILP |
| AIR | AIRA | AIRP |



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### Axis



- Also compared to the occiput condyles
  - A-P Open Mouth view: Laterality, noting position of dens and spinous
  - Lateral neutral: Anteriority – posteriority relative to C3

### 14 Axis listings



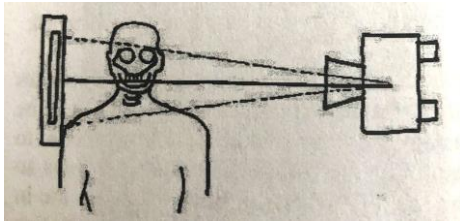
|        |        |
|--------|--------|
| ESL    | ESR    |
| BPSL   | BPSR   |
| SPBL   | SPBR   |
| ESL-SL | ESR-SR |
| ESL-BL | ESR-BR |
| CPBL   | CPBR   |
| PLI    | PRI    |



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### Lateral cervical neutral set-up



Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015

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Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015

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### ORIGINAL RESEARCH

## Palpation and X-ray of the Upper Cervical Spine: A Reliability Study

*John Hart D.C.<sup>1</sup>*

J. Vertebral Subluxation Res. Oct. 25, 2006



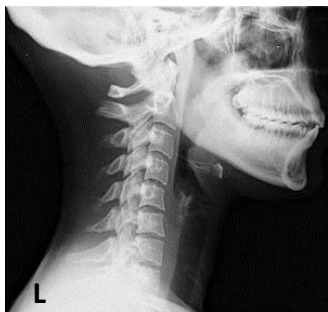
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Fig. 2. Lateral Cervical Radiograph.<sup>1</sup>



From Hart, JVSR 2006

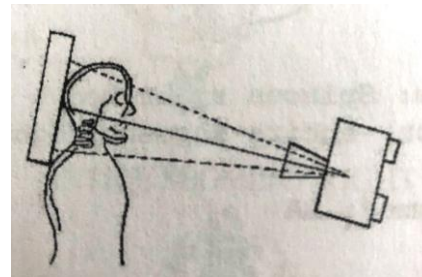
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From Wikipedia.com

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### A-P Open Mouth X-ray Set-Up



Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015

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# A BRIEF HISTORY OF THE ANTEROPOSTERIOR OPEN-MOUTH RADIOGRAPH

John Hart, DC

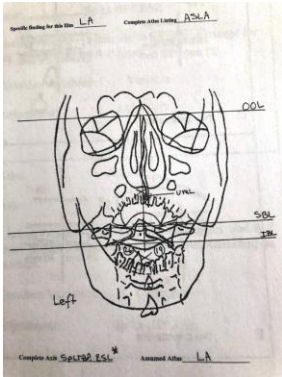


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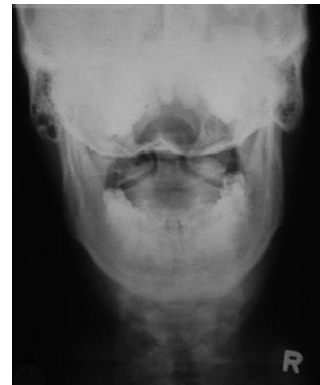
Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015

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Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015

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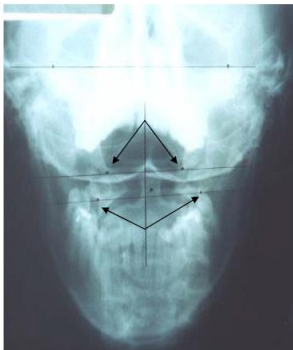
From Hart, in  
*JMPT* 2004

64

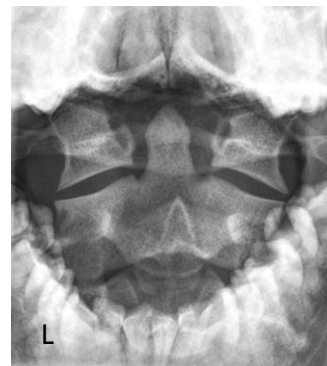


Fig. 1. AP Open Mouth Radiograph<sup>1</sup>

From Hart, *JVSR* 2006



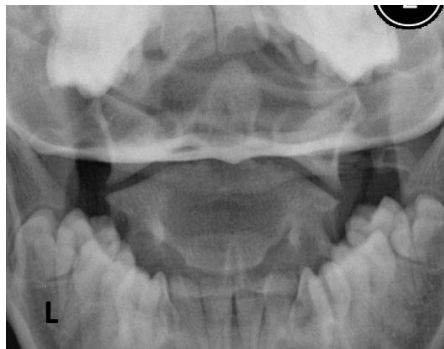
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From [sunshinethroughlaughter.com](http://sunshinethroughlaughter.com)

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From radiopedia.com

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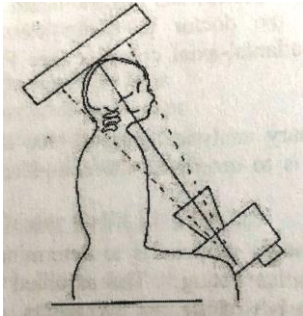
Nasium

From Hart  
in JVSR 2006

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### Base Posterior X-ray Set-Up



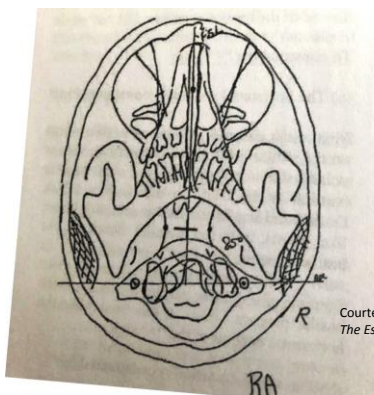
Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil, 2015*

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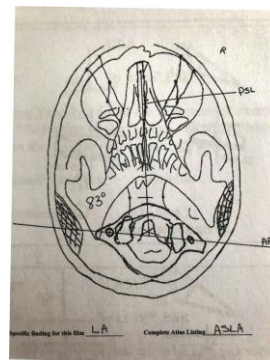
Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil, 2015*

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Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil, 2015*

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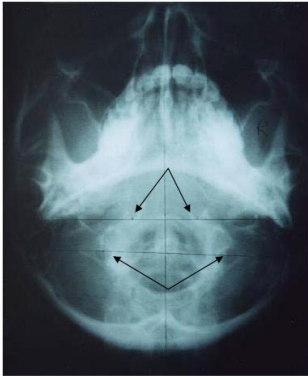


Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil, 2015*

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Fig. 3. Base Posterior Radiograph.<sup>1</sup>



From Hart, JVSR 2006

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NCBI Resources How To  
 PMC US National Library of Medicine National Institutes of Health  
 Advanced Journal list

Journal List > J Can Chiropr Assoc > v 59(2); 2015 Jun > PMC4486989



The Journal of the Canadian Chiropractic Association

J Can Chiropr Assoc. 2015 Jun; 59(2): 173-192.

PMCID: PMC4486989

PMID: 26136610

Language: English | French

Craniocervical chiropractic procedures – a précis of upper cervical chiropractic

H. Charles Woodfield, III, BPhm, DC,<sup>1</sup> Craig York, DC,<sup>2</sup> Roderic P. Rochester, DC,<sup>3</sup> Scott Bales, DC,<sup>4</sup> Mychal Beebe, DC,<sup>5</sup> Bryan Salminen, DC,<sup>6</sup> and Jeffrey N. Scholten, DC<sup>7</sup>

J Can Chiropr A

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Nasium



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Vertex



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Adjustment



Adjustment



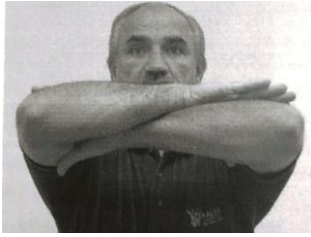
- Toggle-recoil
  - Side-posture
  - Knee-chest position



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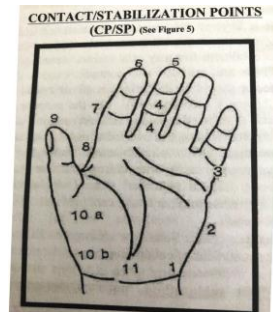
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Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015



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Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015



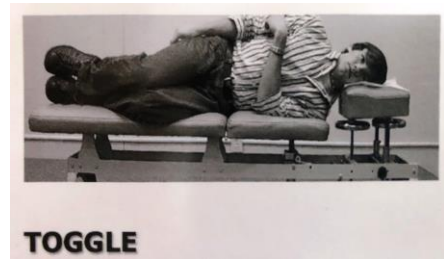
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Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015



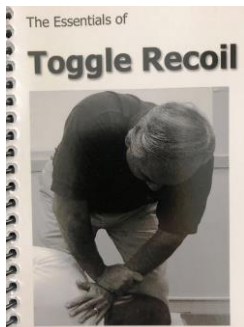
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Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015



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Courtesy John Strazewski, SC, M.S.Ed  
*The Essentials of Toggle Recoil*, 2015

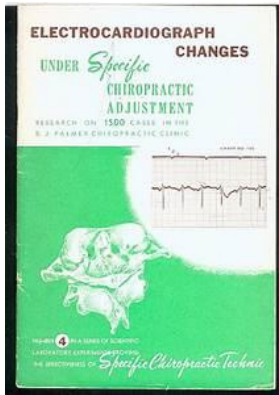


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## HIO Research



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### Upper Cervical Chiropractic Management of a Patient with Idiopathic Parkinson's Disease: A Case Report

Journal of Upper Cervical Chiropractic Research, Volume 2012

Steve Landry TRP, DC [Bio](#)

### An Interdisciplinary Approach to Juvenile Idiopathic Scoliosis, Craniosynostosis, and Chiari I Malformation

Journal of Pediatric, Maternal & Family Health Chiropractic, Volume 2012

An Interdisciplinary Approach to Juvenile Idiopathic Scoliosis, Craniosynostosis, and Chiari I Malformation

Brigitte Bowler D.C. [Bio](#) & Kathryn Conlen BA, MT, CST [Bio](#)



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### Remission of Hepatocellular Carcinoma in a Patient under Chiropractic Care: A Case Report

Annals of Vertebral Subluxation Research, Volume 2

Remission of Hepatocellular Carcinoma in a Patient under Chiropractic Care: A Case Report

Gerald Lee and Clarence D. Jensen, D.C.

### ACUTE CERVICAL TORTICOLLIS AND PALMER UPPER CERVICAL SPECIFIC TECHNIQUE: A REPORT OF THREE CASES

Chiropr J Aust: Sep 1996(26:3): 89-93  
By Drs. Bolton & Bolton



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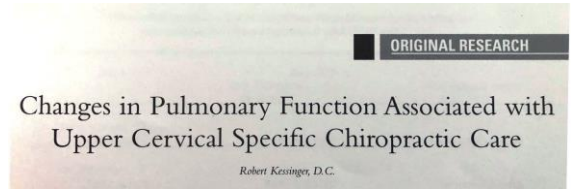
90



### Chiropractic care in the treatment of asthma

By LZ Killinger, DC

Palmer Jnl Res. 1995 Sep;2(3):74-77



Journal of Vertebral Subluxation Research



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### Changes in Visual Acuity in Patients Receiving Upper Cervical Specific Chiropractic Care

Annals of Vertebral Subluxation Research, Volume 2

Changes in Visual Acuity in Patients Receiving Upper Cervical Specific Chiropractic Care

Robert Kessinger, D.C., Dessy Boneva, D.C.

### Improvement in Chronic Hypertension Following a Single Upper Cervical Adjustment: A Case Report

Journal of Upper Cervical Chiropractic Research, Volume 2015

Robert C Kessinger, DC & Carl Moe, DC



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### Some of the speaker's related literature and research

**Original Research**

**Reduction of Resting Pulse Rate Following Chiropractic Adjustment of Atlas Subluxation**

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|   |  |
|---|--|
| <p>John Hart, DC, MHS<br/>Assistant Director of Research<br/>Sherman College of Chiropractic,<br/>Spartanburg, SC</p> | <p><b>Abstract</b></p> <p><b>Introduction:</b> Resting heart (pulse) rate (PR) is an autonomic marker that may be useful in subluxation-centered chiropractic practice. The present study investigated the change in PR following chiropractic adjustment of C1 subluxation.</p> <p><b>Methods:</b> A convenience sample of 23 chiropractic students was examined on three</p> |
|---|--|

Annals of Vertebral Subluxation Research. March 3, 2014



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**Table 1. Pulse Rate (BPM) of Subluxated Patient Group by Gender**

| Subluxated Group | n  | V1         | V2         | V3         | V3-V2 | p-value | 95%CI         | ES   |
|------------------|----|------------|------------|------------|-------|---------|---------------|------|
| Entire           | 23 | 71.2(11.6) | 80.8(13.1) | 78.1(14.5) | -2.7  | 0.243   | -7.4 to 2.0   |      |
| Females          | 11 | 74.2(12.7) | 83.3(15.8) | 86.4(13.3) | 3.1   | 0.292   | -3.1 to 9.3   |      |
| Males            | 12 | 68.5(10.3) | 78.5(10.2) | 70.5(11.4) | -8.0  | 0.014   | -14.0 to -2.0 | 0.74 |

Table 1. Summary statistics for pulse rate (BPM) for subluxated patients as an entire group and by gender. V1= pre 1 visit, V2 = pre 2 visit, V3 = post visit. Under V1, V2, and V3 columns, data reported as mean (SD). The V3-V2, p-value, 95% CI (confidence interval), and ES (effect size) columns pertain to V3-V2 differences. ES calculated for statistically significant results (only males in this case).

### Analysis Of Resting Pulse Rates Before And After A Single Chiropractic Adjustment For An Individual Patient: A Descriptive Study

J Hart, M Schwartzbauer

**Citation**

J Hart, M Schwartzbauer. *Analysis Of Resting Pulse Rates Before And After A Single Chiropractic Adjustment For An Individual Patient: A Descriptive Study*. The Internet Journal of Chiropractic. 2016 Volume 5 Number 1.



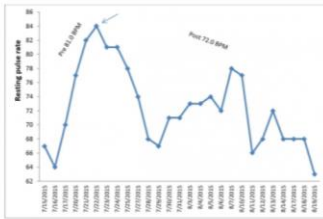
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**Figure 2a**

Resting pulse rates (RPRs) for the patient in this study. Arrow = adjustment. Pre-adjustment RPR (of 81.0 BPM) is the average of the last three pre-adjustment RPRs (7-20-15 to 7-22-15). Post-adjustment RPR (of 72.0 BPM) is the average of the remaining RPRs following the adjustment (7-23-15 to 8-19-15). The post-adjustment RPR decrease (of 9.0 BPM) was statistically significant ( $p = 0.03$ ) with a large effect size (of 1.8).



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### Heart Rate Variability Following Spinal Adjustment: A Practice-Based Study

J Hart

**Citation**

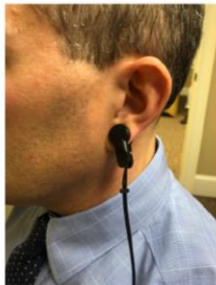
J Hart. *Heart Rate Variability Following Spinal Adjustment: A Practice-Based Study*. The Internet Journal of Neurology. 2019 Volume 21 Number 1.

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**Figure 3**  
Ear clip sensor.



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**Table 2**

Areas of spinal adjustment and corresponding HRV increase

| Area adjusted              | n  | Mean HRV change |
|----------------------------|----|-----------------|
| Atlas (C1) only            | 10 | 7.4             |
| Atlas and lumbar or pelvis | 4  | 1.1             |
| Pelvis only                | 2  | 6.7             |

n is the number of patients (e.g., 10 patients had atlas-only adjusted which corresponded with a mean HRV increase of 7.4 ms).



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ORIGINAL RESEARCH

# Athletic Performance and Physiological Measures in Baseball Players Following Upper Cervical Chiropractic Care: A pilot study

Jon Schwartzauer, D.C., Jason Kolber, Mitzi Schwartzauer, D.C., John Hart, D.C., John Zhang, M.D., Ph.D.

JOURNAL OF VERTEBRAL SUBLUXATION RESEARCH, VOL. 1, NO. 4, 1997

**Abstract** — Changes in athletic performance and physiological measures in university baseball players was assessed before, during and after a specific duration of upper cervical chiropractic care. Each athlete's performance was evaluated through assessment of the vertical jump, broad jump specified, standing broad jump, and muscle strength. Physiological measures including blood pressure, pulse rate, microcirculation (capillary counts), and treadmill stress testing were also evaluated. **Twenty one male baseball players, assigned randomly to either a control or chiropractic (adjustment) group, completed the study.** The subjects were required to complete three sessions of athletic ability and physiological tests. The first session was administered before commencing chiropractic care. The second and third sessions were administered after the initiation of chiropractic care at five and fourteen weeks, respectively. Only those subjects in the adjustment group received chiropractic care. **The results showed significant improvement at fourteen weeks in muscle strength and long jump distance in the group receiving adjustments. Moreover, this same group showed significant improvement in capillary counts at five and fourteen weeks of chiropractic care. Trends in decreased or increased performance in other physical and physiological measures were accompanied by either moderate or large effect sizes within both the chiropractic group and control group. Evaluation of these trends in the group receiving chiropractic care revealed decreases in resting blood pressure and pulse rate as well as pulse rate following treadmill activity. By comparison, trends in these same measures showed increases within the control group.**



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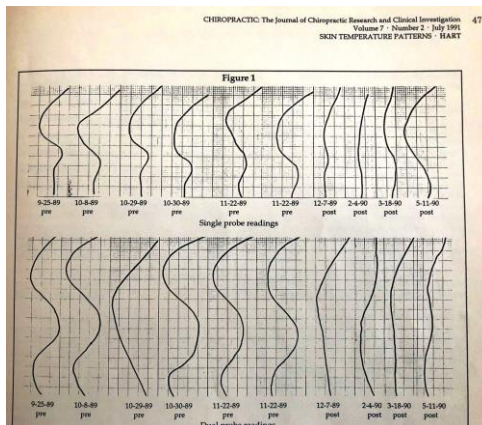
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46 CHIROPRACTIC: The Journal of Chiropractic Research and Clinical Investigation  
Volume 7 · Number 2 · July 1991

## SKIN TEMPERATURE PATTERNS OF THE POSTERIOR NECK USED IN CHIROPRACTIC ANALYSIS

A Case Study  
John F. Hart, D.C.



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**Chiropractic Economics**

Thank you for your attention !

Speaker's email: [jhartdc@yahoo.com](mailto:jhartdc@yahoo.com)

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