

The Thompson Technique

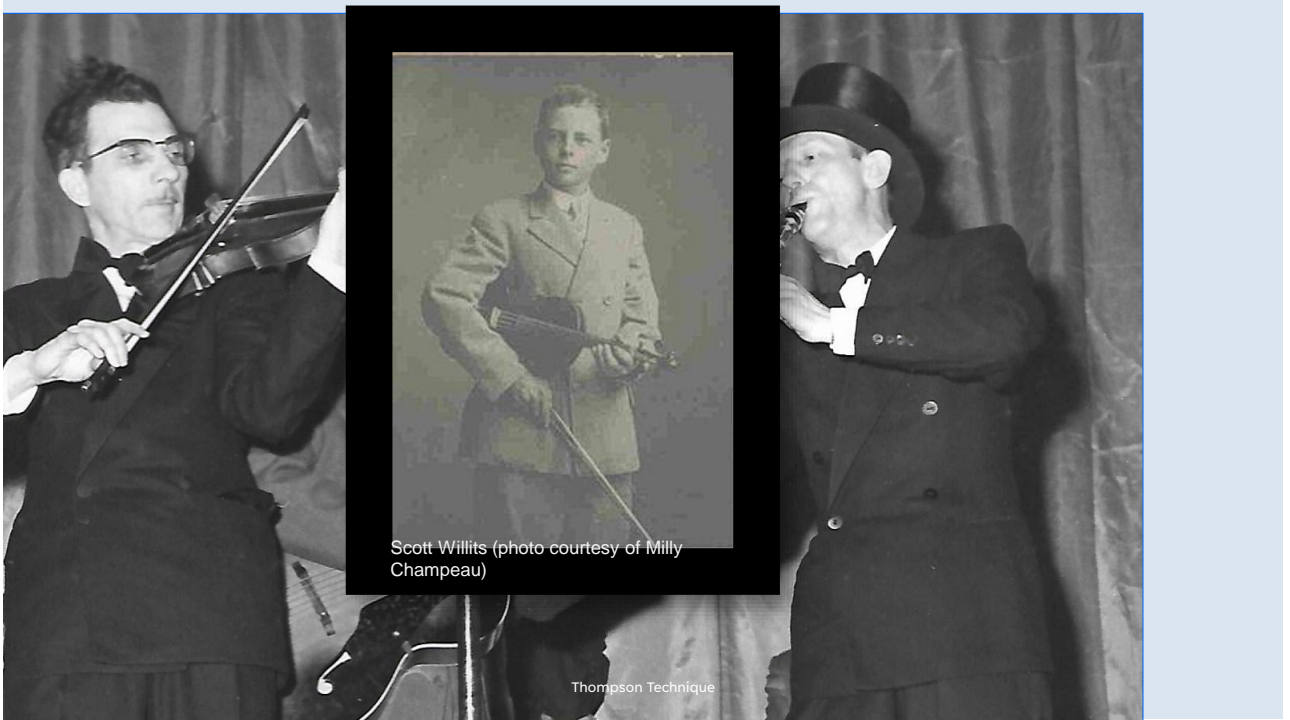
Beth Zogg DC, LCP



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Thompson Technique



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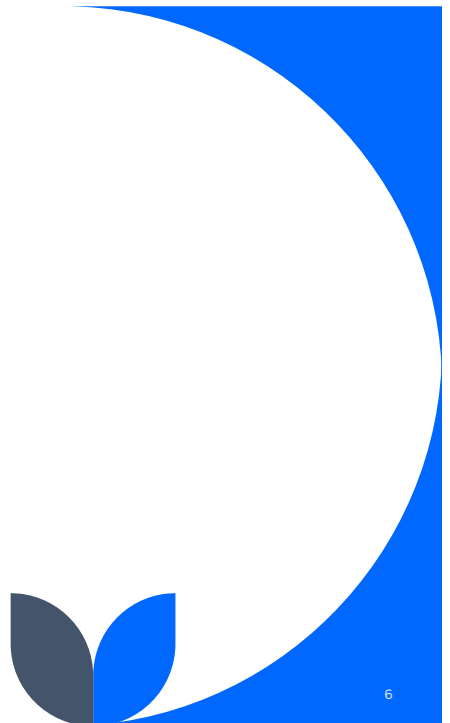
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First drop headpiece research

Dr. Thompson need to research his drop headpiece. Thankfully, his friend Dr. Nip Quigley allowed him to use it on the mental patients at Clearview Sanitarium with wonderful results.

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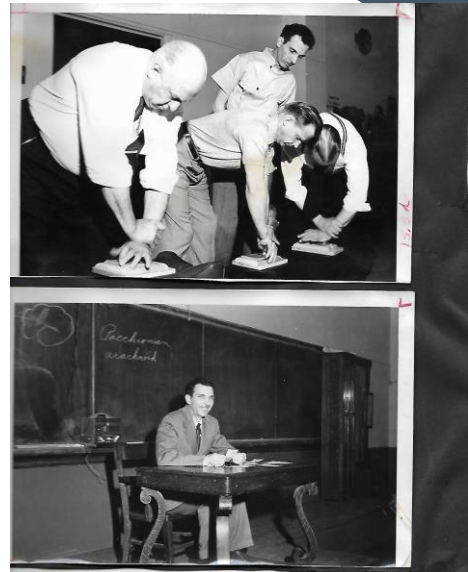
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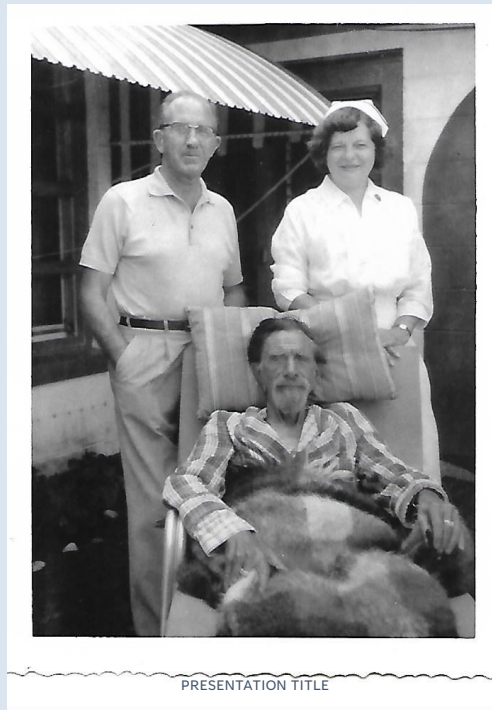
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PRESENTATION TITLE

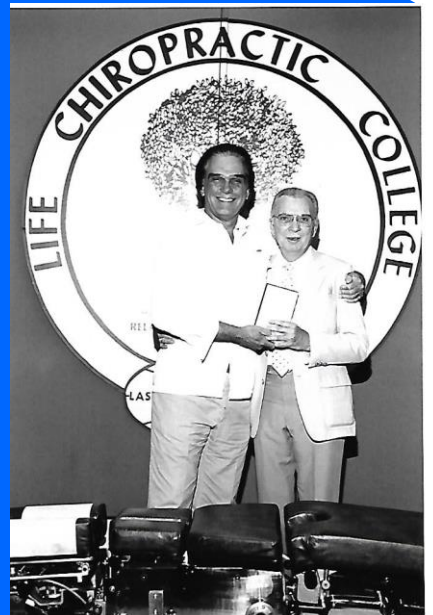
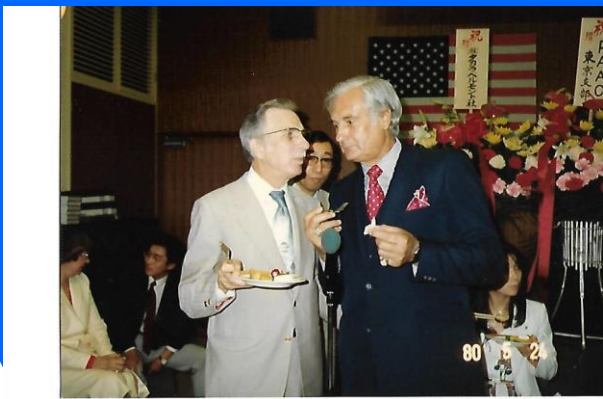


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Thompson-Derefield Leg Check Analysis

Systematic approach to the location of VSC.

The patient's body/ Innate shows us where to adjust

Simply follow the leg check analysis- "Chasing the Derefield"

Analysis gives you a pre and post check

Analysis can be used with any adjusting procedures as an indicator of when and where to adjust.

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Analysis + Adjusting Technique



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Zenith Thompson 440 Adjusting Table

Unique system of “weighing” the patient- only need enough force to drop the pad which is gentle on the patient and the doctor

The force from the adjustive thrust goes through the patient, through the pad- when the pad hits bottom, the patient’s INNATE makes the correction.

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Patients understand that the “doctor” is inside of them.

Drop table makes a good adjustor a GREAT adjustor because of the speed of the drop.



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The Thompson Technique Five Categories

Cervical Syndrome
 Bilateral Cervical Syndrome
 Negative Dereflection
 Positive Dereflection
 Exception Dereflection



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Cervical Syndrome – C1-C7



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Bilateral Cervical Syndrome



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Negative Dereflection – At Sacrum or Lumbar



PRESENTATION TITLE

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Positive Dereflection



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Exception Derefied



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Three Possibilities- One Leg Contracted in Extension

Cervical Syndrome
Negative Derefied
Positive Derefied

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Three Possibilities When Legs are Even in Extension

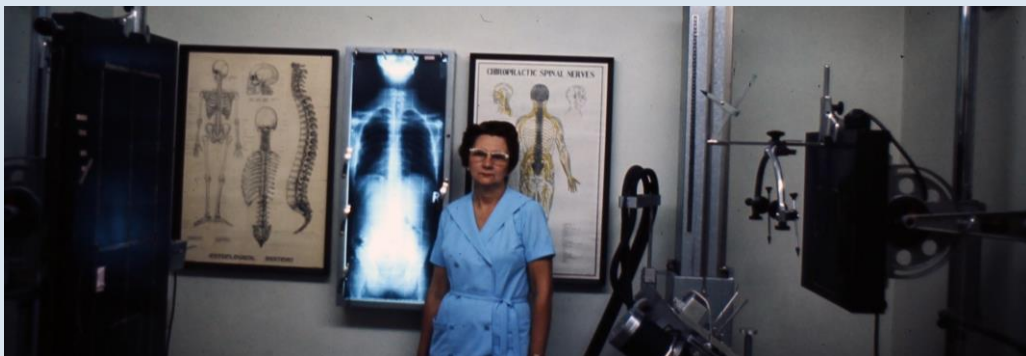
Patient does not need an adjustment
Bilateral Cervical Syndrome
Exception Derefieid

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What other criteria did Dr. Thompson use?



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How did Dr. Thompson analyze x-rays?

Dr. Thompson analyzed films for Toggle Recoil listings as well as for Grostic work. He took X-rays on every patient to know “what NOT to adjust.” (Contra-indications). When there was a discrepancy between X-Ray and leg check findings, Dr. Thompson went with the leg check analysis.

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Spend time adjusting patients, not adjusting tables

Zenith 440



Pelvic piece versatility



Forward Motion Headpiece



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Do not use the same force on a drop table as a flat bench!

The beauty of the drop principle is to use less force with increased speed.

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Vertebral Subluxation Through the Lens of the Thompson Technique

Beth Zogg DC, LCP

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Origins of Thompson Technique

What is Chiropractic Technique?

Does the Thompson Technique have its
own definition of VS?



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How did this view of VS effect the development of the table and anlaysis?
 How does Thompson Technique locate VS?
 How does Thompson Technique correct VS?



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Definition of Chiropractic

Chiropractic is a philosophy, science and art of things natural; a system of adjusting the segments of the spinal column by hand only, for the correction of the cause of disease.

(Stephenson, 2015)

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Study of Art, Stephenson Art. 19

The study of Art is the study of how to restore the governed forces of intelligence to matter, when those forces are lacking in the dis-eased tissues of the body of a “living thing.”

(Stephenson, 2015)

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Definition of Subluxation, Stephenson Art. 386

a subluxation is the condition of a vertebra that has lost its proper juxtaposition with the one above, or the one below, or both; to an extent less than a luxation; and which impinges nerves and interferes with the transmission of mental impulses.

(Stephenson, 2015)

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All of the factors of the foregoing definition must be included in order that it be a Chiropractic definition.
(Stephenson, 2015)

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Art. 387

A subluxation is the result of unbalanced resistive forces in response to an invading penetrative force.
(Stephenson, 2015)

”

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The resistive forces, in this case, are unbalanced because of the limitations of matter, or the nature of the invading force.

To the invading force, Innate makes resistance, adaptively.

Innate always has to work with material, therefore her efforts are limited by the limitations of matter.

The spine is the most common place to suffer from unbalanced resistive forces because it is the foundation of the body.
(Stephenson, 2015)

History In The Making, Volume XXXV Palmer 1957

In CHIROPRACTIC there is but ONE CONDITION of matter which creates ONE disease, regardless of organ or organs concerned, degree of minor or major importance, or sufferings occasioned thereby, viz.,

- (a) A CONCUSSION of forces
- (b) where EXTERNAL INVASION overcomes INTERNAL RESISTANCE
- (c) which MISALIGNS one vertebra in relationship with its corresponding above and below
- (d) producing A VERTEBRAL SUBLUXATION
- (e) which, because of such misalignment, occludes a foramen
- (f) thru which nerves have exits

(Palmer, 1957)

History In The Making, Volume XXXV Palmer 1957 cont

- (g) CONVEYING AND TRANSPORTING an abstract nerve force, energy or power
- (h) REDUCING ITS QUANTITY FLOW
- (i) SLOWING DOWN its quantity speed of action
- (j) per a given UNIT OR UNITS of time
- (k) Creating A STATE OF PARALYSIS of function
- (l) DIMINISHING THE VALUE of its product or by-products
- (m) Inducing change FROM ACUTE TO CHRONIC conditions

(Palmer, 1957)

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History In The Making, Volume XXXV Palmer 1957 cont

- (n) CALLED dis-ease
- In CHIROPRACTIC there is but ONE CONDITION of matter which needs correction, viz.
- (o) one NATURAL REVERSED MOVEMENT of an external correction
 - (p) AN ADJUSTMENT of the vertebral subluxation
 - (q) OPENING the occlusion
 - (r) RELEASING PRESSURES upon nerves
 - (s) Permitting A RESTORATION of normal QUANTITY flow of abstract nerve force thru MATERIAL structures

(Palmer, 1957)

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History In The Making, Volume XXXV Palmer 1957 cont

- (t) FLOWING FROM above down, inside out
- (u) which, when it reaches periphery of those nerves
- (v) RESTORES PAR LEVEL of normal activity
- (W) Producing NORMAL products
- (x) GIVEN TIME to rebuild, reproducing a condition called health
- (y) All of which TAKES PLACE INTERNALLY WITHOUT artificial, unnatural, external interference other than that mentioned

(Palmer, 1957)

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History In The Making, Volume XXXV Palmer 1957 cont

- (z) Letting the INTERNAL INNATE INTELLIGENCE do everything else that automatically follows:
...Disease, its cause and cure
correction IS AS SIMPLE AS THAT!

(Palmer, 1957)

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Did Dr. Clay Thompson agree with BJ?

Student of BJ

While listening to BJ Palmer as a new Chiropractic student, Clay began to understand how Chiropractic had saved his life. He was amazed at all he learned from BJ.

BJ like a father

Dr. Thompson got the attention of BJ because of his mechanical mind. The two of them grew very close. In time they taught and traveled together. BJ could see that Dr. Thompson had the BIG IDEA and trusted him to protect it.

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Drop headpiece came out of necessity!

Dr. Thompson had a mechanical background prior to Chiropractic school. When he gave his first adjustment in the student clinic at Palmer, he felt a tremendous amount of force come back into his body. He knew there had to be a better way.

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Newton's First Law of Motion

A BODY IS IN EQUILIBRIUM IF NO FORCE IS ACTING UPON IT. IF IT IS AT REST, IT REMAINS SO: IF IN MOTION, IT PERSISTS IN MOTION, UNLESS AN OPPOSING FORCE IS MET.

(Thompson, 1990)

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Newton's First Law of Motion

The patient's body weight is stabilized on the drop table cushion until the Chiropractor applies the adjustive thrust. The thrust imparts motion to the vertebral segment, which remains in motion until the conclusion of the drop. When two bodies fall through space and there is a concussion of forces at the bottom, the force of the first goes through the second, completing the adjustive correction. It is at this point Innate utilizes the force to correct VS.

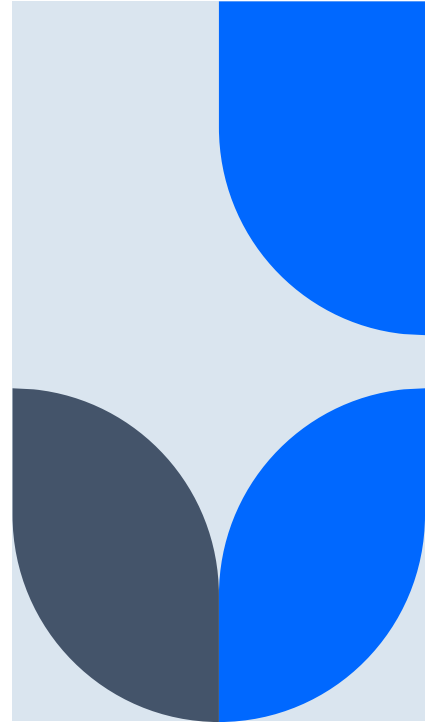
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Soon BJ got word of this new principle and asked to see the headpiece. After receiving an adjustment on the headpiece, he told Dr. Thompson this new principle of the drop mechanism would revolutionize Chiropractic. An agreement was made between Dr. Thompson and BJ. The new headpiece would be called the Palmer Thompson Adjustment (PTA) Headpiece. It was actually BJ who encouraged Dr. Thompson to develop the PTA full-spine drop table.



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Mechanical Advantage




Newton's law provides a mechanical advantage which is easier on the doctor and the patient. Utilization of the drop headpiece and/or full spine drop table will add years to your practice.

....Does this principle of the drop mechanism more effectively correct VS?

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Extensive research was done on the PTA headpiece at the BJ Clinic



In Chapter VII, SPECIFIC RESEARCH, OF History in the Making,

BJ laid out the history of adjusting tables which evolved to keep up with the latest scientific research on adjusting technique.

(Palmer, 1957)

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History in the Making, page 39

- The DD Palmer flat one-piece table
- Two-piece divided table, each separate from other
- Spring lift, to relieve patient from straining in getting down to or up from table
- Hydraulic lift upright table
- Knee-chest, legs forward or backward, which principle is not revived and added to our PTA full length table
- Side-posture
- PTA head-piece
- NOW, PTA full spine table, side-posture, even adaptable to basic technique if desired

(Palmer, 1957)

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History in the Making, page 39 cont

- As of this time (1957), after working with this table and seeing what it makes possible, we are convinced it is the most progressive step to more accurately adjust any subluxation, or for correction of any misalignment.

(Palmer, 1957)

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EVOLUTION OF ADJUSTING

BJ stated, In all the EVOLUTION of all adjusting, desire always has been to see how little invasionary force WE could use.

- To see how much it made possible an Innate responsive reaction to set and seat the subluxation naturally and normally.
- In a crude, limited way, we externally and educationally can approximate the abnormal position of a vertebral subluxation.

(Palmer, 1957)

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EVOLUTION OF ADJUSTING cont

-in a crude, limited way, we can approximate the adjustment above or below but in the last analysis INNATE is the only force THAT KNOWS accurately efficiently and correctly where it is what it was, what it should be, and can and does set it and seat it in its precise normal position.

(Palmer, 1957)

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How does Thompson Technique correct subluxation?

It doesn't... INNATE Does!

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Stephenson, Art. 395 BJ's Answer To A Medical College

It has often been said by the medical profession that no one could move a vertebra of the spinal column and that the Chiropractic claims were all fake. They went so far as to make the following test to show that it was a fake. They forgot, or else never knew that real chiropractors do not claim they adjust vertebrae, but Innate Intelligence does it.

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BJ continues in History in the Making

All we are doing now, is to take this new principle of the PTA headpiece, that makes it possible to Innate to do a more perfect and precise job in adjusting the superior cervical specifics, and apply the same principle in correcting the inferior specific misalignments, if, as, and when they exist. In no sense, however, is the getting back to the old meric system as we once knew it.

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THE PTA TABLE, page 42

ADJUSTING on the PTA head-piece, or the PTA table, IS AN ART and calls for deep ARTISTIC INSIGHT.

We strongly advise any sloppy, don't care, lazy, indolent, bungling, slap-happy, back-puncher to not waste time or money getting this PTA table. If he does he will injure more people and ruin his practice. On reverse, I advise every one who is a careful, thoughtful, particular adjuster to secure this table, because in its use he will deliver what we construe to be miracles, even in spite of all the great work we have done heretofore.

(Palmer, 1957)

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Stephenson Art. 388 External Forces

External Forces are environment or universal or physical forces; forces not assembled by Innate Intelligence. Their main characteristic is that they are not adaptive, though they can be adapted.

They may be either beneficial or harmful to the body

(Stephenson, 2015)

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Stephenson Art. 391 Resistive Forces

Resistive Forces are Internal Forces (innate forces) called into being to oppose Penetrative Forces.

“Bucking” is the term used to describe what a patient does when he is getting a poor adjustment or has had previous experience with poor adjustments.

(Stephenson, 2015)

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Stephenson Art. 392 INNATE CONTRACTION OF FORCES

Innate Contractioc of Forces are the efforts made by Innate Intelligence through the tissues of the vertemere region in response to a concussion.

When a subluxation occurs, it is because the reaction to Innate's resistance (in the body) is ill-timed or unbalanced, through the limitations of matter.

(Stephenson, 2105)

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Stephenson Art. 392 INNATE CONTRACTION OF FORCES cont

When an adjustment occurs, it is because the reaction in the body to Innate's resistance is called forth scientifically and intentionally, by the adjustor, so that the reaction is joined with the adjustic force in timeliness, amount and direction.

(Stephenson, 2015)

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Stephenson Art. 392 INNATE CONTRACTION OF FORCES cont

However, every adjustor should strive to make his percentage of acceptable forces as high as possible...If the force is delivered by "brute strength" in spite of Innate's objections, it calls forth no adjustic forces by Innate, and may result in trauma.

(Stephenson, 2015)

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THE PTA TABLE, page 42 HX cont

This table makes possible results beyond our wildest dreams, remember it is as capable, in reverse, as being just as dangerous in the hands of any person who thoughtlessly and carelessly uses it to do anything any old way.

The PTA table is another step along the continuous and tortuous road we have set as our goal

It isn't exactly an over-all-glow, or a feeling of complete relaxation; possibly the nearest expression would be to say "There is an all-rightness feeling" which comes into one.

(Palmer, 1957)

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Chapter VIII, History page 44

In speaking of the Electroencephaloneuromentimpograph,

BJ said the following of Dr. Thompson's inventions,

"We have tested PTA adjustments on PTA head-piece and PTA table, with timpograph, and it proves we more quickly restore more quantity of mental impulse supply, in worse cases, than any other method in our career.

(Palmer, 1957)

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The Subluxation Specific- The Adjustment Specific, Vol. XVIII Palmer, page 78

ADJUSTMENT is the result of an action upon a SUBLUXATED vertebra, upon the part of the CHIROPRACTOR, using external applied force, meeting with internal resistance force upon the part of the live sick patient, intentionally locate and intentionally positioned, which changes a SUBLUXATION to its normal apposition with its superior and inferior co-respondents, which information is secured by the competent use of a NCM to secure knowledge of LOCATION and the use of a SPGH to secure knowledge of POSITION;

(Palmer, 1930)

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The Subluxation Specific- The Adjustment Specific, Vol. XVIII Palmer, page 78 CONT

Which, because thereof, reopens the occluded foramen, releases pressure upon nerves, reduces interference to transmission, lessens resistance, and restores transmission of mental impulses between brain and body, and does thereby ADJUST the cause of dis-ease in one or multiple places in the body below, or above. An ADJUSTMENT can be given only to a living body.

(Palmer, 1930)

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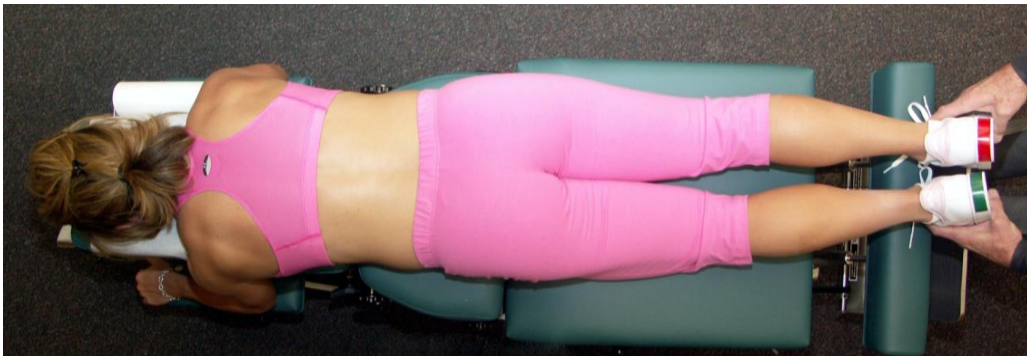
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Leg Check Protocol



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Cervical Syndrome



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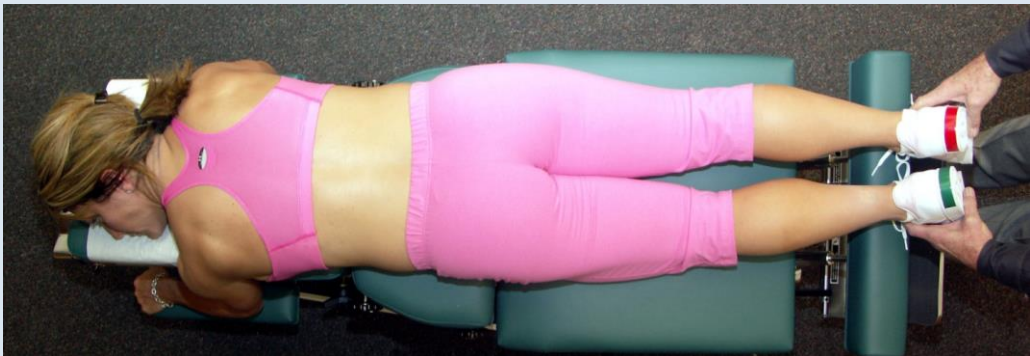
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**Head Turned to Left
No Change or Gets Worse**



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Legs balance when looking to right Right Cervical Syndrome



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Tender Nodule/ LPJ



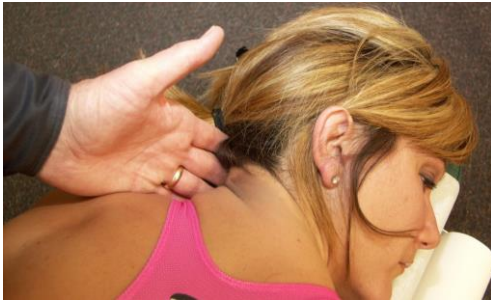
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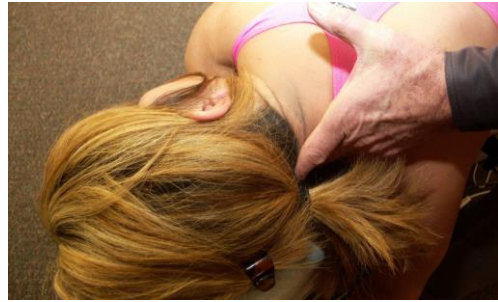
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Right Cervical Syndrome

Adjust from Left



SCP – tender/painful nodule



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Listing: Left or Right Cervical Syndrome

Table: Cervical and Dorsal sections function together, light tension

PP: Prone with head to side of CS

DP: Side opposite of CS

CH: Superior hand

CP: #8

SCP: Painful/tender nodule over lamina of involved vertebra
(Thompson, 1990)

(Thompson, 1990)

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LOC: Towards median line with P-A, I-S or S-I
in accordance with disc plane

SH: Inferior hand

CP: #11

SCP: Zygomatic arch

LOC: Slight counterthrust to aid in dropping
the headpiece.

TP: According to LOC

Torque: None

(Thompson, 1990)

(Thompson, 2015)

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What if there is no tender nodule?

Look to Atlas

Dr. Thompson often adjusted atlas with Toggle Recoil

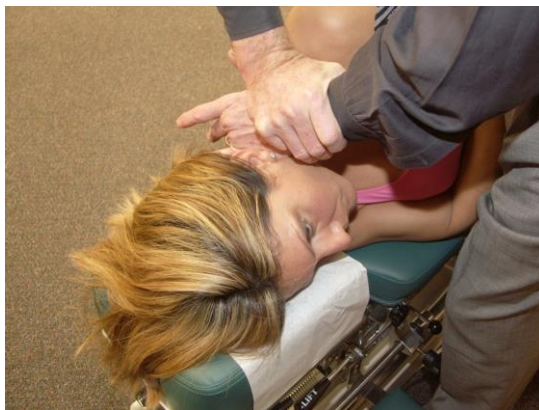
In addition to Toggle Recoil, you could use an instrument or the Alan Brady modification while the patient is prone.

You could also adjust atlas supine or seated (Gonstead, Diversified, etc)

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CERVICAL SYNDROME (ATLAS)

- Toggle Recoil on Zenith 440



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What if there is more than one tender nodule?

Adjust the lowest segment and recheck the legs

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What if there is a RCS and a LCS?

Adjust the lowest segment and recheck the legs.

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What if there is no change in leg length after the adjustment?

Repeat the entire Cervical Syndrome adjustment, but change the segmental contact point to the next vertebra below.

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**BILATERAL CERVICAL
SYNDROME**



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Bilateral Cervical Syndrome

Legs will be even in extension.

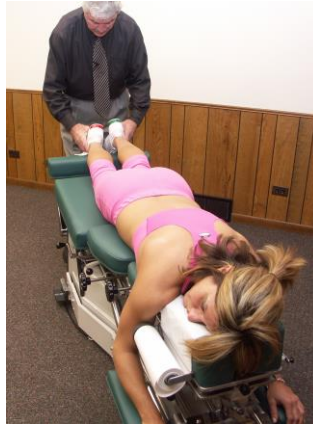
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BCS- Legs even in flexion



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BCS – right leg goes short on head rotation to the right



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BCS- left leg goes short on head rotation to the left



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BILATERAL CERVICAL SYNDROME

- Contact the Base of the Occiput With a Double Thenar Contact
- Elbows Stay Very Low
- The Thrust is I-S With a Rolling/Lifting Motion
- Open Up Articulation and Innate Makes the Correction



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BILATERAL CERVICAL SYNDROME

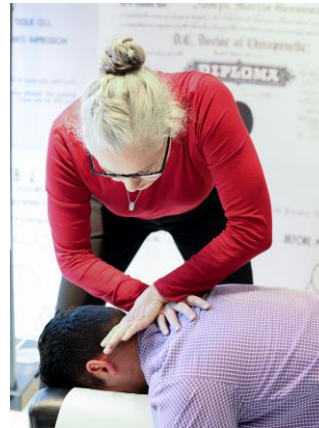
- Table: Cervical and Dorsal Drop Sections function together, light tension
- PP: Prone with NO head rotation
- DP: Either side
- CH: Both hands
- CP: #10
- SCP: Just lateral to the EOP at the occipital brim
- LOC: P-A, I-S with scooping motion
- Torque: None
- (Thompson,1990)



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BILATERAL CERVICAL SYNDROME- Original technique taught by Dr. Thompson

- Table: Cervical and Dorsal Drop Sections function together, light tension
 - PP: Prone with NO head rotation
 - DP: Either side
 - CH: Inferior
 - CP: Web of hand
 - SCP: Base of Occiput
 - Loc: I-S
 - SH: Superior
 - CP: Web of hand
 - SCP: Upper thoracic spine
 - LOC: S-I
 - Scissor Motion
 - Torque: None
- (Thompson, 1990)



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Over-Compensated Cervical Syndrome



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Table: Cervical and Dorsal sections function together, light tension

PP: Prone with head turned towards the spinous laterality.(toward the side that balances the legs on head rotation)

CH: Superior Hand

CP: #8

SCP: Head of First Rib

LOC: S-I, R-L or S-I, L-R depending on side of involvement

(Thompson, 1990)



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SH: Inferior Hand

CP: #11

SCP: Zygomatic Arch preferred

LOC: Stabilizes only or may apply a slight counter-thrust during adjustment

TP: According to LOC

Trapezius tension and spinous deviation should resolve post adjustive thrust.

Adjustment can be done from the head of the table.

(Thompson, 1990)



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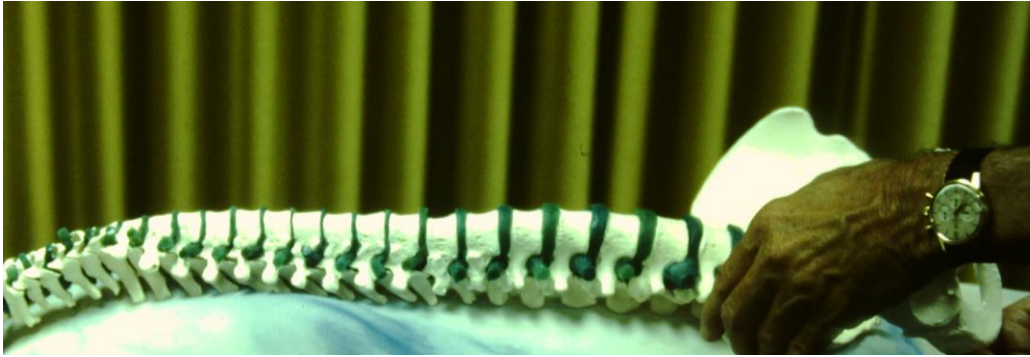


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Negative Derefied -D



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PRESENTATION TITLE

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First rule out Anterior
Inferior Sacrum-
then look for lumbar
problem

Negative Derefied

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Mechanics of -D

Tension is exerted upon the semimembranosus and semitendinosus muscles

Ischium is pulled INFERIORLY AND ANTERIORLY.

Due to Sacro-iliac articular shape, the ILIUM ALSO MISALIGNS INTERNALLY (IN ilium in Diversified listing using the PSIS as the reference point)

Pubic arch is elevated causing a 'thickening' of the ligamentous structures from prolonged tension

Base of Sacrum drops INFERIORLY AND ANTERIORLY
(Thompson, 1990)

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What happens to the lumbar spine in a -D?

The Lowest lumbar (L5) attempts to drop into the gap created between L5 and sacrum with an adaptive response of psoas major and erector spinae muscles on the opposite side.



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Short leg stays short in flexion.



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Be careful...

Make Sure That Your Reference is Along a Line Between the
2nd Sacral Tubercle and the External Occipital Protuberance
A Very Slight Deviation Can Change a “Short” Leg to a “Long”
Leg

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First, Check for trigger points.

Anterior Inferior Sacrum or Primary Lumbar Subluxation?

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LOOK FOR TENDERNESS ON THE INVOLVED SIDE:

Ischial tuberosity

Medial knee (medial aspect of tibial condyle)

Superior aspect of pubic tubercle

Inferior margin of posterior superior iliac spine (PSIS)

Achilles tendon (thickening and tenderness)

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On the uninvolved side

Look for trigger points:

Breast Area (costo-sternal junction)

Costo-transverse junction – Erector Spinae

**YOU ONLY NEED ONE TRIGGER POINT TO DETERMINE
PROBLEM IS AI-SACRUM**

NO TRIGGER POINTS ? LOOK AT LUMBAR

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AI Sacrum Supine Part I



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Use sacral blocker / make sure patient's sacrum is anchored to blocker

Involved leg flexed and 'falls out to side'
 Rotate inferior hand around thigh to contact the ischial tuberosity with forearm parallel to the table

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Part 1

Table: Insert sacral blocker

PP: Supine

DP: On involved side, inferior, in close

CH: Inferior Hand

CP: #8

SCP: Anterior Inferior aspect of ischium on involved side

LOC: I-S, some A-P

(Thompson, 1990)

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Part 1

SH: Superior Hand

CP: #11

SCP: Lateral aspect of Anterior Superior Iliac Spine on the involved side.

TP: None

Torque: None

Thrust 3 to 5 times
(Thompson, 1990)

Thompson Technique

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Part 2

Table: Remains the same

PP: Supine with uninvolved leg flexed, involved leg fully extended.

DP: Involved side

CH: Superior Hand

CP: #11

SCP: Inguinal ligament on involved side

LOC: Medial Torque

(Thompson, 1990)

Thompson Technique

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Part 2

SH: Inferior Hand

CP: #11

SCP: Patella of uninvolved leg

LOC: Stabilizes

TP: None

Torque: Medially torque inguinal ligament
(Thompson, 1990)

Thompson Technique

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113

Stabilization hand contacts the ASIS

Thrust I-S and slight A-P

The involved side leg may appear even shorted until the 2nd phase of the correction is performed.

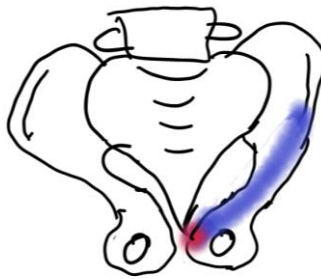
Part I of this correction removes the inferiority of the sacral base.

Thompson Technique

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Part II, contact inguinal ligament.



Thompson Technique

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NEGATIVE DEREFIELD (SUPINE) Part 2 -Removes internal rotation of ilium



Thompson Technique

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The opposite leg is bent with the foot resting on the surface of the pelvic cushion

The thenar portion of the contact hand is placed against the inguinal ligament

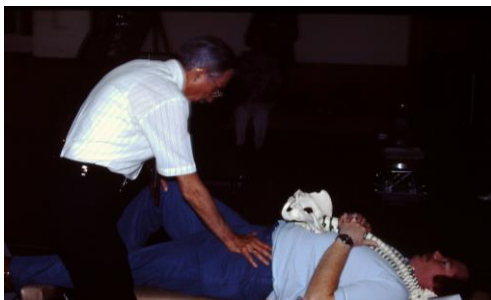
The opposite hand is placed on the bent knee

Thompson Technique

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117

Flex the uninvolved side leg
Involved side leg goes straight



Superior hand will contact the inguinal ligament and apply a medial torque

Inferior hand stabilizes the opposite SI joint by pressing down on the knee.

Follow up with the Thompson Rotated Sacrum Check.

Thompson Technique

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LUMBAR SUBLUXATION

119



No positive trigger points...

The body of the lowest lumbar will usually fall toward the side of the AI Sacrum.

You will need to use static and motion palpation, challenges, etc. to determine how the lumbar spine has subluxated.

There is not a 'set' way to adjust a lumbar in Thompson

120

Options:

Single hand contact with drop
Thompson Seated Lumbar
Side posture lumbar with drop
Instrument adjusting
Lumbar roll

Thompson Technique

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121

POSITIVE DEREFIELD +D

PI Ilium

122

One leg short in extension No change head rotation



Thompson Technique

123

123

Legs Flexed To 90- Short Leg Gets Longer Resistance



Thompson Technique

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124

Contact is Inside the Anterior Crest of the Ilium on the Short Leg Side- Contact the Inguinal Ligament



Thompson Technique

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- Supine correction is preferred
- Stand on the involved side in close and superior
- Contact the inguinal ligament with the superior hand
- Stabilization had rolls in as for toggle
- Thrust toward the opposite foot



Thompson Technique

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PP: Supine
 DP: On side of + D, superior and in close
 CH: Superior
 CP: #1
 SCP: Inguinal ligament (tender area)
 SH: Rolls in as for toggle
 LOC: A-P, S-I toward opposite foot
 TP: According to LOC
 (Thompson, 1990)

Thompson Technique

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Exception Derefeld X-D



Thompson Technique

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Legs even extension, one leg draws short flexion

Legs are even in extension

One leg draws short in flexion

Check for Cervical Syndrome with legs flexed. If legs balance, you have X-D CS. If Legs do not balance, check your trigger points to determine if the primary problem is sacrum or lumbar.

Thompson Technique

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Chasing the Derefield



Thompson Technique

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Disease removed by innate-unknown to patient

Proper adjustment to the spinal column by removal of nerve interference allows the body to heal areas of involvement unknown to the patient who had a complaint of some minor neck or back pain. The human spinal cord consists of some 400 trillion fibers. A compression in the spinal cord at any level will cause a lack of normal impulses to some specific organ and area of the body. This is the Chiropractic premise of Subluxation.

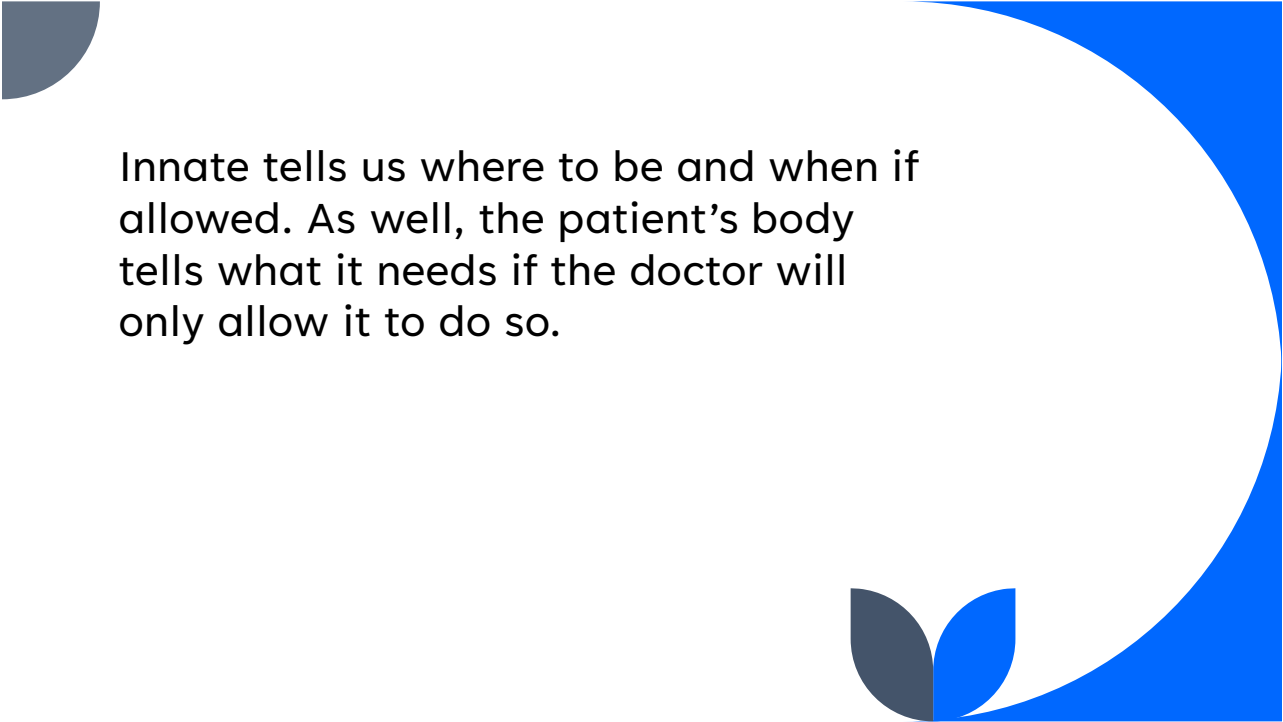
131



Innate making drugs


specific chemical to add or delete from the blood. This is the area in which the medical doctor has no way of knowing the exact amounts to add to the body for any specific condition or disease.

132



Innate tells us where to be and when if allowed. As well, the patient's body tells what it needs if the doctor will only allow it to do so.

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The doctor will find out, that in truthfulness, he is not the doctor at all. The patient is more the doctor because when the patient is examined, the DC will get all the necessary information from him. The patient heals his own body. We as DCs, neither add nor remove anything in the way of body parts or chemicals, because the body will heal itself. With this particular examination, fantastic results will be found.

Thompson Technique

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Dd palmer & Harvey lillard

In 1895, DD Palmer adjusted deaf Harvey Lillard on three separate visits. At the end of the third visit, Harvey Lillard could hear. At this particular point, Chiropractic was 100% effective. DD though he had found the cure for all hearing problems, and that he could return hearing even to those who had been deaf for years.

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Three more deaf patients were lined up for DD by Harvey Lillard. Number 2 patient did not regain his hearing but did report to DD that he was no longer plagued with stomach trouble and severe indigestion. Now DD felt Chiropractic was 50% effective. Number 3 patient did not regain his hearing either, but told DD that his back pains were gone. Now Chiropractic was 33% effective. The fourth patient did not regain his hearing, but his sinus headaches were gone. Chiropractic was only 25% effective. At this point, DD surmised that maybe what he had discovered wasn't for hearing at all, but for all conditions of the human body associated with the brain and spinal column.

136

We know that the results and changes found were due to the Innate Intelligence of the human body. In the case of the patients of DD Palmer, Innate didn't know that DD was trying to cure hearing problems. Innate used the thrust in the best way that she could. Since there was a concussion of forces, the reaction was different in each patient. This would prove beyond a shadow of a doubt that correction of interference from brain cell to tissue cell is #1. This is in fact the big idea.

137

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Thompson Technique

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Neuropathophysiology of VSC

Chiropractic Thermography

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- Palmer Criteria
- (days of BJ)

Vertebral Subluxation Complex

1. Loss of juxtaposition of vertebra with the one above, the one below or both-less than a luxation.
2. Occludes an opening.
3. Impinges nerves.
4. Interferes with the transmission of mental (neural) impulses between the brain and tissue cells of the body.

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1. Neuropathophysiology
2. Kinesiopathology
3. Myopathology
4. Histopathology
5. Biomechanical

See- The Chiropractic Vertebral Subluxation
Part 9: Complexes, Models, and Consensus
From 1979-1995 by Simon Senzon, MA, DC

**Faye
Model**



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What is the Neuropathophysiology of VSC?

- How can we measure it?
- How does all this fit in to every day practice?

142

ICA College of Thermography

Microcirculation of the skin is observed visually and objectively with thermography, which thus provides the physician with diagnostic potential for evaluating primary subluxation complexes and their physiological components.

143

DIAGNOSTICS Thermography: An Evaluation Tool Visual Aids for Chiropractic

By Glenn Stillingson, D.C., Ph.D., and Kevin L. Stillingson

A raging question that confronts us is, "Why is so much attention being focused on thermography lately?" The answer: There is a new dimension in thermography which cannot be denied. By way of a color picture of the entire back, a thermograph shows the body's reaction to the chiropractic adjustment.

First of all, thermography can be used with any technique. Does your technique work? Does it really work? We're not talking now about clinical results which are determined after the patient gets well. There is a way to evaluate the effectiveness of your technique from the moment of the first adjustment. You should be able to document the effectiveness of the adjustment on each visit.

Has it ever occurred to you that the patient does not need the same adjustment every time he comes to the office? If you have to be doing the same thing, visit after visit, your practice can become tedious. Doesn't it make sense that the spine should change after you make an adjustment? If it stays the same, then you must not be doing anything.

The spine should change, and as it does you need to alter the way you are adjusting. Do you keep adjusting the same way even if there are no results? The problem with this approach is that the patient often dies only as a patient, but oftentimes to chiropractic completely.

We have a policy in our office: If what you're doing isn't working, change it. This must apply in all aspects of the office, not only in patient care.

The chiropractor specializes in correcting vertebral subluxations. And yet, as professionals, we often lack documentation of what we do. We say we are correcting the vertebral subluxation, but what proof do we have other than the patient's symptomatic picture? The question arises: How can we show a correction other than symptomatically? One of the most effective ways is with instrumentation.



Dr. Glenn Stillingson

The question arises: How can we show a correction other than symptomatically? One of the most effective ways is with instrumentation.

using line graphs with strip chart recorders and with the new technology of thermograms or "heat pictures" of the back.

Why don't more chiropractors use instrumentation? When we ask this question at seminars around the country, most doctors tell us that either their colleges didn't teach instrumentation, or if they did, the subject was passed over so lightly that they didn't have any confidence in it.

So we get many phone calls and letters asking about thermography and instrumentation. Some of the inquiries are quite humorous — like the doctor who called and wanted an instrument only for the purpose of impressing the

patient. He wasn't interested in learning how to use the instrument for evaluating progress of the patient which would make him a better doctor. We're just not on the same wavelength with chiropractors like that.

We have visited in offices where doctors use an instrument only to impress the patient. Sometimes the doctor is looking out the window when using the NCM. We have actually seen the wires of the thermocouples worn off the probes and although the instrument was rendered inoperable, it was still being used only to dazzle the patient.

Is documentation of patient progress really important? We think so. Yet, many doctors say, "I can't be bothered. Besides, my patients get well anyway."

It is important to record the status of the patient on the first visit. This is valuable especially for insurance cases or for evidence in court cases. In addition, it serves as a basis of comparison as you monitor changes at successive visits. This is crucial information for the doctor and for the welfare of patients.

Are we going to take care of patients when they are complaining and tell them to come back only when they are in trouble again? If we let the decision of how often to be adjusted to the patients, they're no better off than when they were being treated medically. We view chiropractic as the most effective method in America to teach people how to be healthy. If we chiropractors and our families get adjustments on a regular basis and we consider that as the best care, then why shouldn't we recommend the best for our patients? As scientists, we should strive to teach our patients that the doctor decides how frequently they should be checked for preventive care. We are lax in our obligation to the patients when we fail to teach them that they will never enjoy good health by waiting until they have trouble again.

continued on page 70

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picture of the entire back, a thermograph shows the body's reaction to the chiropractic adjustment.

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Dr. Glenn Stillwagon

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Dr. Glenn Stillwagon

*The question
How can
a correction
than symptoms
One of the
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146

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INSTRUMENTATION

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Chiropractic Must Stake Its Claim On the Vertebral Subluxation Complex

Drs. Glenn and Kevin Stillwagon 1996

Correction of VSC is in the domain of the DC

Chiropractic Thermography provides an objective model to establish the efficacy of correction of VSC

“We are at a crossroads. The chiropractic profession needs a chance to help our nation meet the challenges in the upcoming years. We can achieve our goals by using the ‘objective model’ and establishing ourselves as experts in the correction of the vertebral subluxation complex. When we do this, patients will enjoy the benefits of chiropractic care for health problems and other musculoskeletal conditions. When we ‘stake our claim,’ the chiropractor will become the gatekeeper to the vertebral subluxation complex and will not be limited to relieving ‘back pain by prescription.’”

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Anatomical
Exams:
MRI, X-Ray

Physiological
Exams:
Instrumentation,
Surface EMG

- We use anatomical exams for both analysis and to rule out pathology.
- We use physiological exams to see the effects of subluxation on muscles and blood flow
- Changes on X-Ray may take time. Changes in physiology can be immediately observed after adjustment.

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What happens when we have no objective measure?

Our job is to provide a force that the patient's body can use to correct VS. It is not our job to chase symptoms. Without objective measures, we find ourselves chasing symptoms. We are tempted to adjust more places more often.

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In a 'symptom chasing' practice, we find ourselves exhausted and frustrated. On one visit, we will be the hero because the patient's symptoms improved, but on the next visit, the patient will blame us when the symptoms returns.



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Andrew A. Fischer, M.D., Ph.D.
Associate Clinical Professor
of Physical Medicine and Rehabilitation
Mount Sinai School of Medicine (CUNY)
Chief, Rehabilitation Medicine Service
VAMC, Bronx, New York

The present status of neuromuscular thermography

The three principal criteria for acceptance of a new diagnostic procedure are: 1. its reliability expressed as reproducibility; 2. accuracy; and 3. comparative results obtained with established conventional methods.

This review will examine the available published evidence underlying each of these three concepts. In addition, we will assess:

1. the evidence provided by other techniques, such as plethysmography and skin resistance tests, for the demonstration of vasomotor dysfunction in sensory demyelination;
2. physiological mechanisms involved in the production of dermal thermal differences;
3. the relationships found between nonradicular pathology, including peripheral nerve and plexus injuries, as well as trigger points, muscle spasms and sprains, and the observations produced by pressure threshold and skin compliance, skin conductance and EMG tests;
4. our experience in the comparative evaluations of thermography versus EMG tests and clinical examinations;
5. the proper role of thermography in clinical practice.

Reliability, Reproducibility and Normal Values for Thermography: Accuracy of TG in Diagnosis of Radiculopathy

The diagnosis of neuromuscular and skeletal pathology by thermography is based on: 1. thermal asymmetry between normal and abnormal sites; 2. a change in normal temperature gradients of limbs or between medial and lateral digits; or 3. disturbance of normal physiological temperature distribution pattern (thoracic-sacral gradient).

Contact thermometry, a technique used for many years prior to the introduction of thermography, had previously demonstrated that in normal persons temperature differences from one side to the other over the trunk and extremities did not exceed 0.3°C except for the forearms, where differences were as great as 0.9°C .

Uematsu¹ using computerized infrared thermography arrived at similar values (see table 1), and Feldman and Nickoloff² concluded that differences between contralateral parts in the upper body exceeding 0.62°C should be

where differences were as great as 0.7°C .

Uematsu¹ using computerized infrared thermography arrived at similar values (see table 1), and Feldman and Nickoloff² concluded that differences between contralateral parts in the upper body exceeding 0.62°C should be

considered abnormal. The probability that a patient exhibiting a temperature asymmetry exceeding 0.62°C will be physically normal is less than 0.005.

Wexler⁴⁴ was the first to demonstrate that pure sensory nerve injury can be visualized by thermography. This, of course, represented an important practical and theoretical finding. Pulst and Haller⁴⁵ proved that in peripheral nerve injuries thermographic changes correspond exactly to loss of sweating and concluded that in peripheral nerves vasomotor and sudomotor fibers are identical. These same authors also demonstrated that after peripheral nerve injury hyperthermia develops due to paralysis of vasoconstrictor sympathetic tone.

The hyperthermia changes to hypothermia in about four

In History in the Making Volume XXXV 1957, BJ wrote:

- spinograph portrayed THE VISIBLE concrete locations and positions of vertebral subluxations and misalignments
- NCM produced evidence OF THE INVISIBLE two factors, the abstract pressures and interferences
- resistance to normal flow of mental impulse supply, excess heat, etc.
- this did not necessarily disprove our local hot box, taut and tender fibers, meric system, majors and minors
- but it did prove WHERE such were and were not
- BEFORE and AFTER adjustment or correction
- whether it WAS an adjustment or just a push, shove, squeeze, or punch in the back
- which did or did not release pressure and restore transmission of mental impulse supply.

Musculoskeletal Thermography A Literature Review Part I



by Timothy D. Conwell, D.C.,
F.A.C.O., Diplomate, American Board
of Chiropractic Osteopathy; Board
Certified, American Chiropractic
Board of Thermography

Clinical thermography is a unique, non-invasive diagnostic imaging procedure which detects and records surface skin temperatures by measuring variations in heat (infrared radiation) emitted from body surfaces. Thermography accomplishes this by scanning the subject with a sophisticated infrared camera. The surface skin temperatures are affected by physiological responses to tissue injury from sensory nerve stimulation (nociception). According to the AMA's Council on Scientific Affairs report,¹ this medical procedure aids the physician in the diagnosis and management of selected neurological and musculoskeletal conditions.

A thermogram is essentially a "heat map" of the dermal contour. The "heat map" or thermal image may objectively demonstrate specific pathology or areas of soft tissue injury. These thermal patterns constitute the basis for aiding in the

diagnosis of pathophysiological conditions associated with pain syndromes of neurologic and musculoskeletal origin. The thermographic patterns or images aid in diagnosing conditions such as facet syndrome, intervertebral disc syndrome, myofascial pain syndrome and trigger points, myositis, musculoligamentous injury, motor and sensory radiolopathy, peripheral neuropathy, reflex sympathetic dystrophy, neurovascular compression syndromes, carpal and tarsal tunnel syndromes, athletic injuries, the inflammation of arthritis and bursitis, vascular disease and other visceral and somatic conditions.

The utilization of clinical thermography has expanded over the past decade due to technological advances in thermal imaging capacities. This noninvasive technique is ideal as a diagnostic procedure since it is

"thermography... aids in the diagnosis and management of selected neurological and musculoskeletal conditions."

completely harmless, without damaging radiation and void of needles or other noxious devices. The need for an objective, noninvasive, non-gamma radiation diagnostic procedure cannot be overemphasized. The availability of a diagnostic procedure to aid in rendering an objective and accurate diagnosis without causing any harm to the patient is most advantageous and warranted. The thermographic findings provide objective documentation of the pathophysiological con-

dition and may justify or negate the existence of what are generally considered subjective complaints. Furthermore, the thermographic findings are beneficial in determining an appropriate treatment management plan by enabling the physician to concentrate therapy on specific sites of injury. In addition, the thermographic evaluation establishes a baseline for musculoligamentous (soft tissue) conditions which is helpful in monitoring the patients' progress to treatment or lack thereof. Thermography is useful in determining if the musculoskeletal complaints are based on hysteria or deception and in ruling out feigned disorders. Of significance is the role a negative thermogram plays with regard to the necessity for further diagnostic testing. Because of the significantly small percentage of false negative thermograms (0.05%), Weinreich² states that thermography is helpful in eliminating the need for further invasive diagnostic testing such as myelography which involves hospitalization, pain, risk and exposure to radiation, EMG which is often painful, CT which is invasive and MRI which is very costly.

This new diagnostic technology, raises the potential for more accurate diagnosis and more appropriate case management for many of our patients who suffer from pain syndromes. However, despite the attributes of thermography as a sensitive diagnostic procedure, it has come under some scrutiny. This paper will review the current thermographic literature, paying particular attention to historical perspectives, physiology, type of equipment, medical necessity, applications and efficacy in order to enlighten the chiropractic physician on the current scientific facts so as to ameliorate what ap-

ing the patients' progress to treatment or lack thereof. Thermography is useful in determining if the musculoskeletal complaints are based on hysteria or deception and in ruling out feigned disorders. Of significance is the role a negative thermogram

30.

Uematsu¹⁰⁹ in an initial study, demonstrated that human surface temperature is symmetrical with an average of $.24^{\circ}\text{C}$ difference between two homologous sides in a healthy asymptomatic population. Uematsu¹¹¹,

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should be considered abnormal. Feldman also states that the probability of a normal asymptomatic patient exhibiting a temperature asymmetry exceeding 0.62°C is less than 0.005%. Saidman⁹⁸ found that

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patterns in the arms and legs in 90% of the studies⁵¹. This literature documents that in the physically normal asymptomatic person, the body is capable of regulating blood flow through the skin in an even symmetrical distribution with a very small difference in temperature. The

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ly interpret the results.

The thermogram does not directly detect pain nor is it a "picture of pain", but instead displays a visible record portraying the cutaneous vasomotor response to pain. It is generally recognized that the

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It is generally recognized that the skin temperature largely reflects the state of the cutaneous vascular bed. The cutaneous vascular blood flow is regulated primarily by the sympathetic nervous system. In addition,

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regulation which is controlled via the vasomotor system. The skin is the largest organ of the body accounting for 30% of the body's weight and using a fourth of the body's blood volume. Its other functions are perception of environmental sensations and alarm systems (pilomotor).

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thermal regulation. The preganglionic sympathetic cell bodies, which originate between T1 and L2 in the lateral column territory are regulated by the central nervous system. By way of the descending fibers

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An asymmetry of 0.6C is presumptive evidence of abnormality and an asymmetry greater than 1 C is definitely abnormal.

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The AMA Council Report -Thermography in Neurological and Musculoskeletal Conditions(AMA Council on Scientific Affairs, Thermology 1987)stated the following:

“Central control of skin temperature affects both sides of the body uniformly and simultaneously, resulting in symmetry of thermal patterns. The presence of significant temperature difference between corresponding areas of opposite sides of the body is suggestive of nerve impairment,”

“Thermography can detect sensory/autonomic nerve dysfunction.”

“Thermography also contributes to the evaluation of possible autonomic nervous system dysfunction and of spinal disorders.”

AMA Council Report

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The Pattern analysis and Break analysis are not compatible and have different conclusions and rationales. For both, the assumed normal is a straight or relatively shallow curved line without sharp deflections. Both make use of the thermocouple principle measuring comparative heat by conduction from skin contact probes straddling the spine. About 3 % of body heat is lost through conduction .These are relative thermal instruments, reading comparative heat differentials.

**BJ Palmer NCM
Pattern Analysis
versus Gonstead
Break Analysis**

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Pattern analysis does not place importance on the location of the deflections while the break analysis does. Gonstead suggested the BREAK may indicate the location of the subluxation and hence area to be adjusted. BJ concluded through research at the Palmer research clinic that exclusively adjusting the upper cervicals caused the deflections or breaks in the lower spine to disappear. BJ concluded subluxations frequently existed far removed from their most evident manifestation and changes of skin temperature did not necessarily indicate location for spinal adjustment. So who was right?

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Well , both. Sometimes VS manifest in skin temperature changes at the level of the VS and sometimes far removed from the level of the VS. There is no cookbook for Chiropractic that's for sure! Do keep in mind that instruments cannot detect "hot nerves" as spine -straddling instruments may be as far as 75 mm from spinal nerves. Instruments read skin temperature up to 5 mm deep which means we are not looking at muscles or organs, but rather a reflection of the sympathetic nervous system through dermal microcirculation. One downfall of these instruments is that they could not detect bilaterally hot or bilaterally cold areas on the patient's back.

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Zeroth Law of Thermodynamics

Thermocouple instruments do not indicate absolute skin temperature. They read two unknowns and the doctor tries to balance them. Other variables that could distort readings are pressure, angle and glide rates. The process of scanning the patient has the potential to alter the skin temperature based on the Zeroth Law of Thermodynamics. (When two objects with different temperatures come into contact, the temperature of both objects will be changed). The thermocouple instruments can change the skin temperature giving a straight line on the post scan when an actual temperature difference is present.

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What was unique about the DTG?

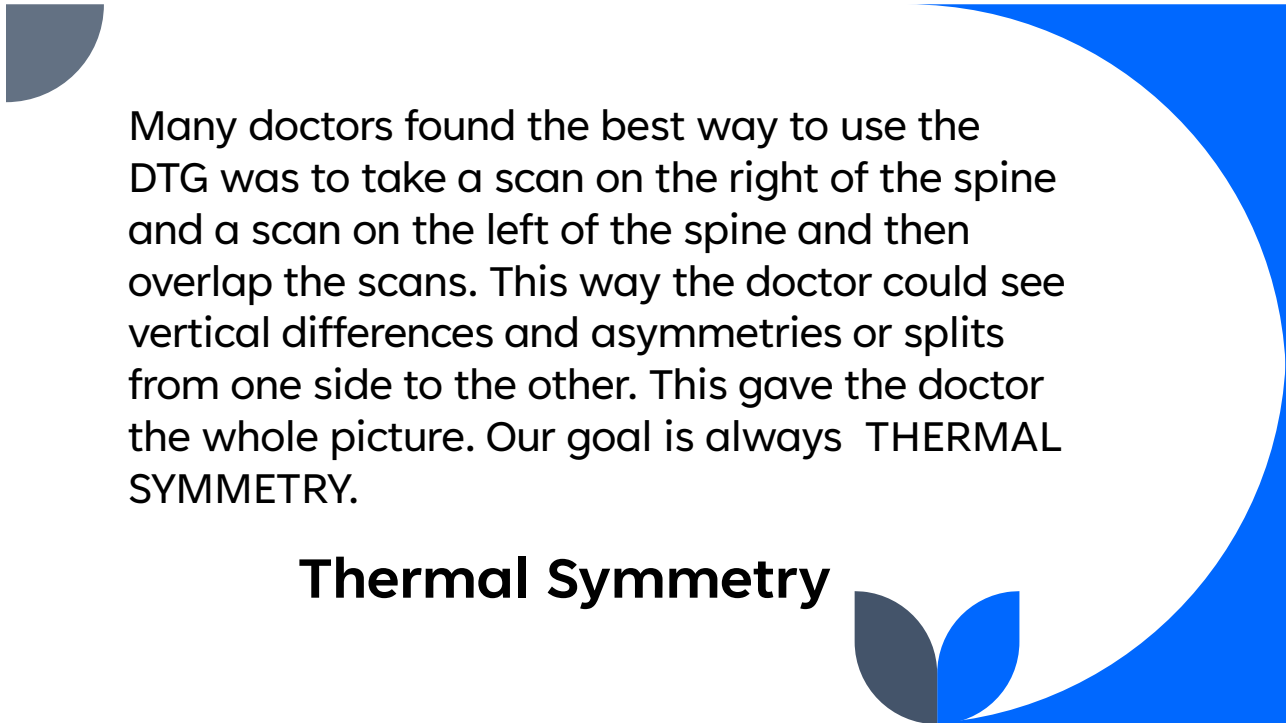
The DTG is an infrared heat sensitive instrument which measured skin surface temperature by detection of the infrared radiation from the body without direct skin contact. About 65% of heat loss from the body is through radiation. It was a measure of absolute temperature that was used unilaterally from sacral base to the hairline.

The instrument did not contact the skin so it was less influenced by scar tissue and skin blemishes which could produce false readings in instruments that do contact the skin.

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The DTG detected vertical heat differences as opposed to the NCM or NS which compared one side of the spine to the other horizontally. If the line graph deviates to the right, this is an indication the skin is getting warmer. If the line graph goes left, this indicates the skin is getting colder. In a normal healthy patient, the line graph will not have hot or cold area, but instead stay close to the center line within a range of 0.5 C.

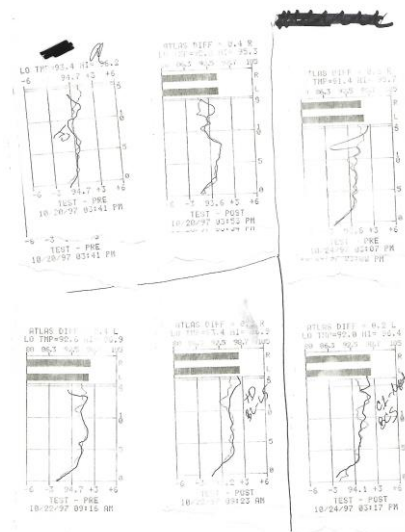
173



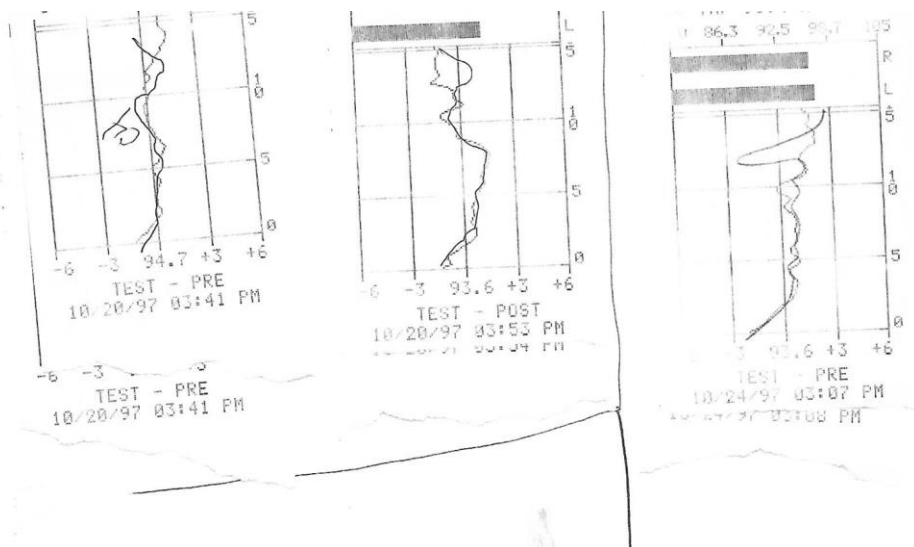
Many doctors found the best way to use the DTG was to take a scan on the right of the spine and a scan on the left of the spine and then overlap the scans. This way the doctor could see vertical differences and asymmetries or splits from one side to the other. This gave the doctor the whole picture. Our goal is always THERMAL SYMMETRY.

Thermal Symmetry

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How does thermography show VSC?

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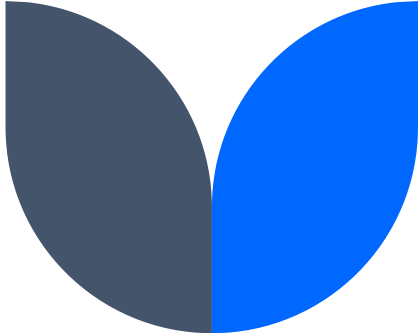
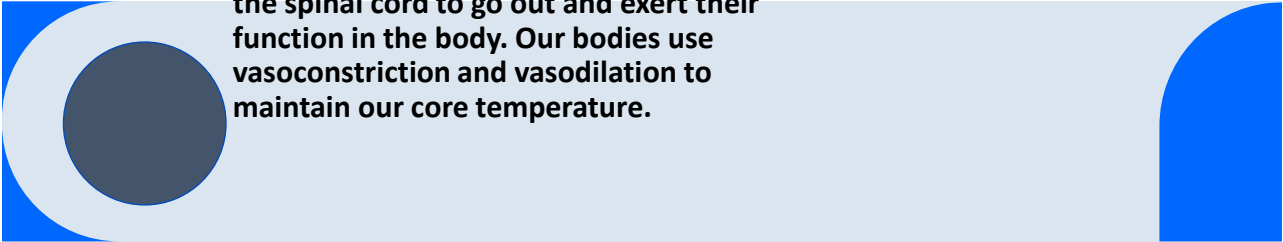
Remember, Innate maintains our core temperature within a limited range at all times. We have the ability to adapt to both internal and external temperature changes. There are three factors that control vasoconstriction and vasodilation. They are :

1. the sympathetic nervous system
2. local pH
3. neuroactive substances.


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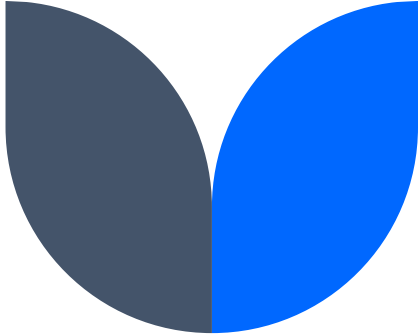
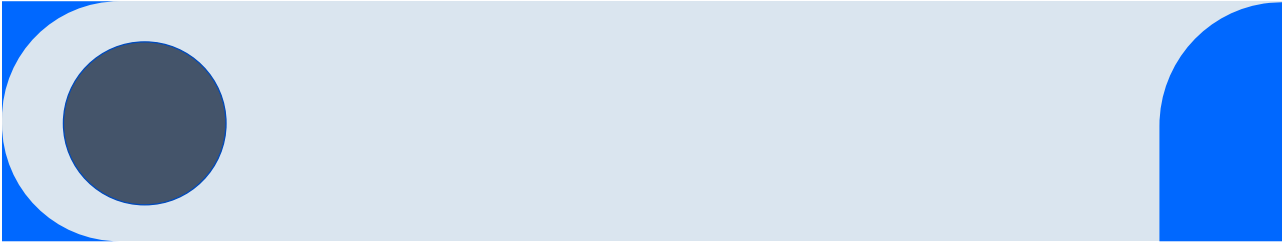
Our blood vessels have the ability to constrict or dilate as needed to make these necessary adaptations. Our sympathetic nervous system, when stimulated will constrict blood vessels. The lateral cell column in the spinal cord houses the cell bodies for the sympathetic ns. A vertebral subluxation causes the lateral cell column of the spinal cord to be maintained in a state of hyperactivity. Hyperactivity of the lateral cell column causes vasoconstriction and decreased skin temperature. Sympathetic fibers leave through the anterior horn and exit the spinal cord to go out and exert their function in the body. Our bodies use vasoconstriction and vasodilation to maintain our core temperature.

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Skin temperature is a function of blood flow, controlled by the autonomic nervous system. This affects both sides of the body uniformly and simultaneously, resulting in a symmetry of thermal patterns in healthy individuals.

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Chiropractors know that a nearly microscopic change of position (loss of juxtaposition) of a vertebra with the one above below or both which is accompanied by neural aberration (sensory disturbance) may produce one, some or all of the following:

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- 1. PAIN (*may or may not be present with VS*) ascend in sensory tracts
- 2. MUSCLE SPASM (*may or may not be present with VS*) synapse in the anterior horn.
- 3. PROPRIOCEPTIVE INPUT/ CEREBELLUM (righting reflex) (*may or may not be present with VS*) ascend to cerebellum in proprioceptive tracts. We can't feel this.
- 4. SYMPATHETIC RESPONSE -*ALWAYS PRESENT WITH VS* (Pulst and Haller have shown that for every sensory input, there is a sympathetic response. Sato and Schmidt concluded that all somatic impulses elicited sympathetic responses) By a multi-synapse with interneurons, and a synapse with cells of the lateral cell column, there is a sustained sympathetic stimulation and vasoconstriction. Surface skin temperature is affected by a reflex activity at the spinal cord level.

182

Dr. Stillwagon called the loss of juxtaposition the most elusive part of the VSC. In Chiropractic Showcase Magazine, Vol.4 #3 July 1995, he quotes Kapanji, "As a whole the column from sacrum to skull is equivalent to a joint with three degrees of freedom: it allows flexion and extension, lateral flexion right and left and axial rotation. The range of these elementary movements at each individual joint of the column is very small (emphasis Dr. Stillwagon) but, in view of the many joints involved the cumulative effect is quite significant.

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In Dr. Stillwagon's opinion, the loss of juxtaposition is such a small range of motion that we have been unable to see it or palpate it on anatomical studies. He did not believe we can see it on a flat x-ray. Since we cannot measure all of the factors of VSC by looking or palpating anatomy, we must focus on ways to measure physiology. That's where the real problem is... disturbed physiology. Dr. Stillwagon believed we are just beginning understand what Palmer meant by 'loss of juxtaposition' in our definition of vertebral subluxation.

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A VS causes the intermediolateral cell column in the spinal cord to be maintained in a state of hyperactivity. Hyperactivity of the pre-ganglionic sympathetic fibers will cause in the long run constriction of blood vessels resulting in ischemia to an organ or organs. With lack of blood flow, there will be lack of oxygen and nutrients

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. There is a rich supply of sensory nerve endings in and around the motor unit articulations of the spine which maintain a normal conversational tone of afferent impulses into the cord segment. This is necessary for normal function and maintenance of tissue. Vertebral Subluxation leads to vasoconstriction -leads to ischemia-leads to disease-leads to death of tissue. A VS causes a perversion of the normal conversational tone between brain cell to tissue cell.

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Think for a moment of what could happen if you had a VS in the lower thoracics or upper lumbar. The sympathetic nervous system becomes irritated at that level and since digestion is not necessary in a fight or flight situation, blood flow is decreased to the intestines. If you had to fight or run from a tiger, your Innate does not care in that moment if you digest your breakfast. Blood will increase to your skeletal muscles instead. Chiropractic adjustments “switch” us out of fight or flight into a “rest and digest” state governed by our parasympathetic nervous system

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. We cannot sustain good health while we are stuck in “fight or flight” mode. Ischemia due to hyperactivity of the lateral cell column is one explanation for this. In its initial stage, a VSC causes neurological dysfunction and a perversion of the normal conversational tone between brain cell and tissue cell is the result. Morphological changes may occur later due to trophic (nutrition) factors or use/disuse of different organs.

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Two Categories of Nerve Impingement

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Subluxation: The condition of a vertebra that has lost its proper juxtaposition with the one above below or both less than a luxation impinges nerves and interferes with the transmissions of mental impulses.

DD Palmer 1910 p. 57 In disease, mental impulses are not impeded, hindered stopped or cut off-they are modified. In IMPINGEMENT does not obstruct; it is either an excitor or a depressor.

P. 161 DD Palmer wrote "An impingement, a pressure against a nerve is never a mechanical obstruction. An impingement does not obstruct. It irritates in a large share of disease, and excites functional activity beyond a normal degree." He also wrote, "An impingement is a modification of an impulse, not necessarily an obstruction."

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What we see in most cases is a VS from disturbed sensory input, not a “pinched nerve.” We have many sensory receptors around the vertebral motor units that are in constant contact with the spinal cord. These include:

Paccinian Corpuscle in cartilage plate (pressure)

Paccinian Corpuscle in facet (pressure)

Paciniform Corpuscles (joint position at end ranges, joint movement and ligament tension)

Nociceptor in annulus fibrosis (pain)

Nociceptor in articular capsule (pain)

Golgi Tendon Organ (proprioception, muscle tension)

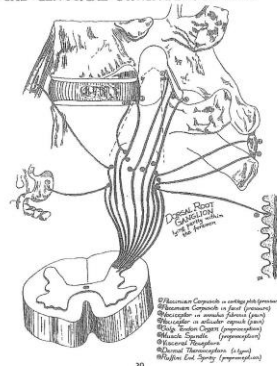
Muscle Spindle (proprioception, change in length of muscle and velocity of change in length of muscle)

Ruffini End Spray (proprioception, mechanoreceptor, awareness of joint movement and position.)

Visceral Receptors also play a role in VSC -will discuss later

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LOCAL SENSORIAL CONVERSATIONAL TONE



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When a VS is present one or several of these receptors will send a message through the Dorsal Root Ganglion to the lateral cell column which houses the cell bodies for the sympathetic nervous system. The bombardment of messages causes the sympathetic nervous system to be sustained in a state of hyperactivity. In the Chiropractic Journal of Australia (Vol 21, number 3, Sept 1991) , the condition of "sympathictonia is defined as the increased tonus of the sympathetic system. The work of Korr produced the concept of the "facilitated segment" whereby spinal dysfunction at a segmental area sensitizes the autonomic nervous system. Sympathictonia would produce a cold region identifiable in temperature reading instruments.

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Ussher states,"In general, afferent impulses from the skin, the dorsal musculature, or the articulations of the vertebral column are relayed through the cord and emerge as impulses to the viscera." Somatic stimulation of a vertebra (Chiropractic adjustment) may alter visceral motor responses. Subluxation is a somatic lesion and through somatosensory irritation of its presence may reflexly alter visceral functions.

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- Now consider this study:
- Somatosympathetic Reflexes: Afferent Fibers, Central Pathways, Discharge Characteristics Akio Sato and Robert F Schmidt Physiological Reviews Vol 53 No 4 Oct 1973
- FOR ALL AFFERENT IMPULSES, THERE IS A SYMPATHETIC RESPONSE
- Pre-ganglionic sympathetic fibers enter the sympathetic trunk at all lumbar levels. (Not the classic T1-L2 theory)
- Mitchell reported finding pre-ganglionic cell bodies at all levels of the spinal cord. Randall, Cox and Alexander supported this finding. Therefore, thermography can detect sensory/autonomic nerve dysfunction.

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RE: Physiologic Rationale

An Overview

An Overview of Proposed Mechanisms underlying Thermal Dysfunction

Betty L. Hamilton, Ph.D.

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FUNCTION TO THE SKIN.

This traditional view of the sympathetic preganglionic cell bodies extending from the T₁ level caudally to the L₂ level has been challenged by Mitchell who states that the majority of these cells are contained within these levels, but that some can be found at all levels of the spinal cord.³⁰ Direct support for this was added by Randall et al who reported both functional and anatomical evidence for the entry of preganglionic fibers into the sympathetic trunk at all lumbar levels.³¹ Although their study was not de-

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SECTION HAS BEEN NOTED BY MANY OTHER AUTHORS.

Sato and Schmidt systematically investigated the reflex relationship between the somatic system and the sympathetics.⁵⁴ They concluded that all somatic impulses elicited sympathetic responses, and while large fiber stimulation tended to decrease the discharge rates of the sympathetic neurons, small nociceptive fibers increased the firing rate. This occurs on both a spinal and supraspinal level. Afferent input excites preganglionics on the same or next level to set up the spinal segmental reflex and sets up the basis for local sympathetic actions (Fig 2). The suprasegmental or

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- . A hyperactive loop is started that loops into other motor units, affecting other dermatomes. As the condition progresses, preganglionic fibers can enter the sympathetic chain and go up or down effecting spinal nerves at different levels causing vasoconstriction along those dermatomes as well. Uematsu talks about a “cross-fire” between the C-fibers and sympathetic fibers that contribute to RSD. The patient may get pain in all of the areas of vasoconstriction and may complain of pain over a large area of skin. The patient may not remember an injury to an area that is far removed from the initial insult.

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Why doesn't a scan show us where to adjust?

We must remember that heat reading instruments don't pick up anything deeper than the top 5 mm of skin. We are not measuring muscle or organ systems, just skin temperature. We are using skin temperature as a window into the function of the nervous system.

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Sinuvebr al Nerve of Luschka

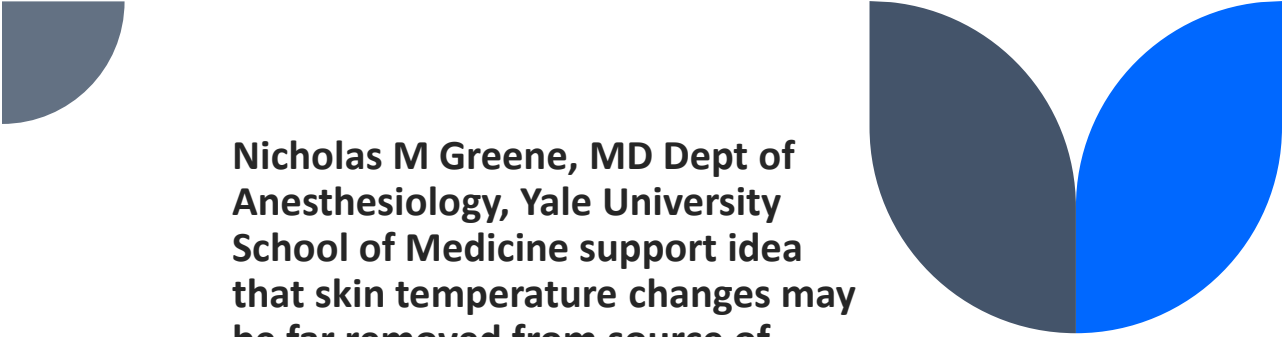
Sinuvebr al nerve of Luschka- this nerve carries sensory and sympathetic innervation to the dura, walls of the vessels, periosteum, intervertebral discs and the posterior longitudinal ligament. The nerve divides into transverse, ascending and descending branches (meaning info can travel up or down 2 to 3 segments). Contralateral and ipsilateral temperature changes were attributed in some instances to the sinuvebr al nerve. A cross over by this nerve does not occur regularly, although there have been some instances of anastomosis across the midline with the nerve of the opposite side. This means reflexes can be transferred to the other side of the motor unit and the other side of the body. Look up Pedersen dissection ascend and descend 1-2 levels and cross to the opposite side.

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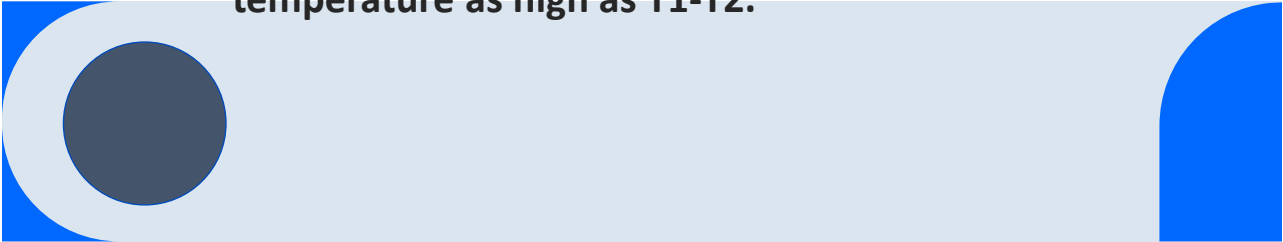
Sympathetic Chain Ganglion

Sympathetic chain ganglion -a subluxated segment may present its manifestations up to 7 segments above or below the subluxated motor unit. Chamberlain and Chamberlain confirm that a zone of differential sympathetic blockade exists during hyperbaric lidocaine or tetracaine spinal anesthesia as reflected by an increase in skin temperature associated with sympathetic denervation. They showed the zone of differential sympathetic blockade averages , not two spinal segments, but rather six or seven spinal segments, a most remarkable finding. The Journal of Anesthesiology Vol 65 No2 August 1986 *A New Look at Sympathetic Denervation during Spinal Anesthesia*

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Nicholas M Greene, MD Dept of Anesthesiology, Yale University School of Medicine support idea that skin temperature changes may be far removed from source of insult. When he did a saddle block at L5, there was an increase in skin temperature as high as T1-T2.



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What causes hot spots on scans when a hyperactive sympathetic nervous system causes vasoconstriction?

Acute vs Chronic: In the acute phase we will often see increased temperature patterns (vasodilation) from the cutaneous axon reflex and antidromic stimulation. As sensory fibers make their way toward the CNS, they gather together in bundles. The closer the bundles get to the cord, the bigger the bundles get. A phenomenon called ephaptic stimulation can occur where there is a transfer of a nerve impulse from one fiber to an adjacent fiber of fibers without passing through a synapse. This is a lateral pass. This new impulse can now go both directions because the myelin sheath depolarizes and repolarizes

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Antidromic or 'wrong way' impulses are efferent impulses exiting out of the posterior nerves towards the periphery. They have been linked to ephaptic transmission which is a way of saying that an incoming impulse has short circuited onto an outgoing fiber. Some Chiropractors believe this can be tied to nerve compression or excessive bombardment of the lateral cell column as the result of VSC. These 'wrong-way' impulses cause vasodilation and pain producing chemicals (Substance P).

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Chronic

Once the patients becomes more chronic and neurotransmitters are not released any longer, the orthodromic flow will come in to effect causing vasoconstriction and decreased temperature. we will see decreased temperature patterns (vasoconstriction) as the result of sustained sympathetic hyperactivity. When degenerative and morphological (shape) changes occur over time, there is compression of the sympathetic fibers which can cause lack of vasoconstrictive impulses and secondary vasodilation and hyperthermia of skin.

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- Damage to sympathetic fibers results in loss of vasomotor tone, producing an increase in blood flow through the affected vasculature with a concomitant increase in temperature. In a study where patients were divided into two groups according to their sympathetic nerve function, the patients with complete loss of sensation in the skin segment relating to the damaged nerve had a skin temperature on the damaged side 1.92-0.939 C higher than the opposite intact limb.

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Transitional State

The time between Acute-hot and chronic - cold may create a transitional state where the thermography scan appears ideal and becomes "abnormal" after the adjustment. In this case, use your adjusting criteria and patient history to make the best judgement. Removing VS can be much like peeling the layers of onion except in this case you are peeling away the layers of neurological dysfunction.

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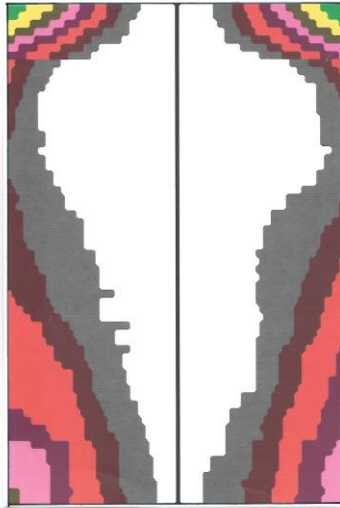
In Vol. XXXII, BJ said, "To adjust the subluxation, then, is to advance mankind, step up his efficiency, increase his ability, make him more natural and more at peace within himself; for all things are possible to him whose body equals his innate." There is no therapy, diet or lifestyle change that will remove a VS. I remember as a student at Life College, we did a study with aromatherapy and it made no change on thermography scans. Injecting pain patients with local anesthesia did not change thermography scans even when the patients were pain-free. Our patients getting injections from their MD are not better. The injections are not getting to the CAUSE of the problem- just putting a band-aid on it. While all these therapies may help patients feel better, they do not correct VS. The devastating effects of VS will still be at work on the patient setting them up for a disease process that could be avoided if we corrected their VS. **We must communicate this to our patients.**

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What are we looking for in our scans? What is a normal range?

Symmetry – the presence of a significant temperature difference (greater than .5 C) between corresponding areas on opposite sides of the body suggests nerve impairment.

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Symmetry = Normal
Asymmetry
= Abnormal

212

H.N. Scholtz, PhD, Professor of Anatomy
University of South Florida
College of Medicine
Tampa, Florida

The neuroanatomy and physiology related to thermography

Introduction

The clinical application of thermography as a means to detect changes in skin surface temperature caused by pain has been gaining increased acceptance as a diagnostic evaluation tool during the past five years. Nevertheless, precise scientific explanations of the anatomical and physiological mechanisms involved in the production of thermographic images remain elusive. It is the intent of this paper to outline briefly some of the mechanisms involved and thereby provide a better understanding of the interpretation of cutaneous thermograms.

The basic elements warranting consideration are: (1) pain with its subjective manifestations; (2) autonomic factors which cause changes in cutaneous temperature; and (3) the anatomical and physiological reflex pathways interrelating pain and the sympathetic nervous system. The first factor, pain, is subject to interpretation by both the patient and the thermographer. The second consideration can be limited to the autonomic and hormonal regulation of the cutaneous vascular bed if such external physical factors as evaporation, convection, radiation, ambient temperature and mechanical stimulation are controlled, since the change detected in skin temperature is generally believed to be the result of alteration of the cutaneous vascular supply.¹⁻³ The third consideration must include both ascending and descending spinal nerve tracts and areas of the brain and spinal cord interrelated by these pathways.

Pain is well recognized as a largely subjective experience having innumerable types and intensities. The recognition of harmful or noxious stimuli is necessary for survival and well-being, but it can itself become destructive. Anatomically, painful or noxious stimuli are generally believed to be detected by free nerve endings and transmitted primarily over small myelinated and nonmyelinated fibers accompanying both peripheral somatic and visceral nerves. Pain of visceral origin usually accompanies sympathetic rather than parasympathetic nerves. Pain is transmitted over all dorsal spinal nerve roots and by certain cranial nerves (i.e., V, VII, IX and X).

1985 Academy of Neuromuscular Thermography Clinical Proceedings

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Summary

- 1) Thermography does not detect pain but records the cutaneous vascular response to pain as well as other stimuli.
- 2) Sympathetic preganglionic axons in the ventral roots (i.e., within the spinal canal) are found only in thoracic and upper lumbar segments and not in cervical or lower lumbar and sacral roots.
- 3) A single preganglionic axon may synapse on four different postganglionic chain ganglia thereby producing a spread of its peripheral effect.
- 4) Postganglionic sympathetic neurons constricting

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cutaneous blood vessels are adrenergic and anything affecting norepinephrine will have an effect on the cutaneous vessels and skin temperature.

- 5) Sensory cutaneous dermatomes do not coincide with sympathetic "dermatomes".
- 6) Several areas of the brainstem and especially the hypothalamus regulate cutaneous blood flow through descending reticulospinal pathways.
- 7) The hypothalamus is under the influence of the cerebral cortex, especially the frontal lobe, through the medial forebrain bundle.

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- 8) Causes of detectable "warm spots" include:
 - a) axon reflexes and the peripheral release of substance P or histamine
 - b) destruction of sympathetic neurons or sympathetic dystonia
 - c) activation of descending autonomic pathways inhibiting sympathetic tone
 - d) infections, mechanical stimulation, radiation, etc.

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etc.

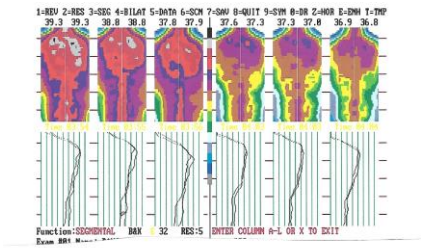
- 9) Causes of detectable "cold spots" include:
- a) reflex activation of sympathetic adrenergic neurons
 - b) direct stimulation of peripheral sympathetic adrenergic nerves
 - c) inhibition of the reuptake of norepinephrine at vascular terminals
 - d) sweating and evaporation

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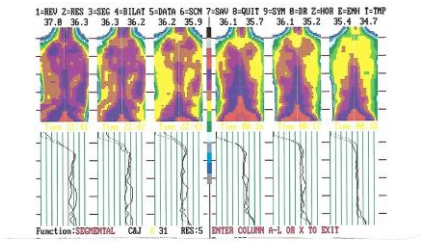
d) sweating and evaporation

- 10) Because of the number of variables which may cause backache and the responses of the cutaneous circulation to painful stimuli, three consistent thermographic recordings over a period of time are recommended.

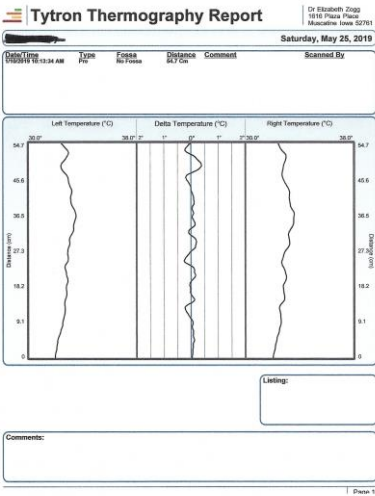
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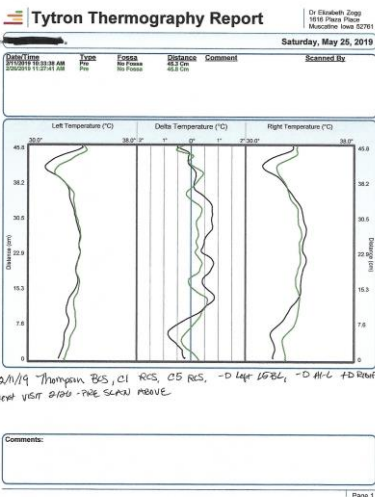
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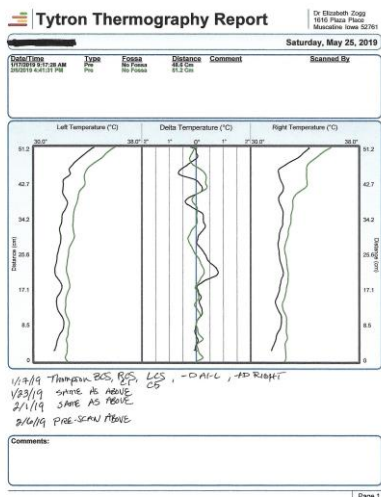
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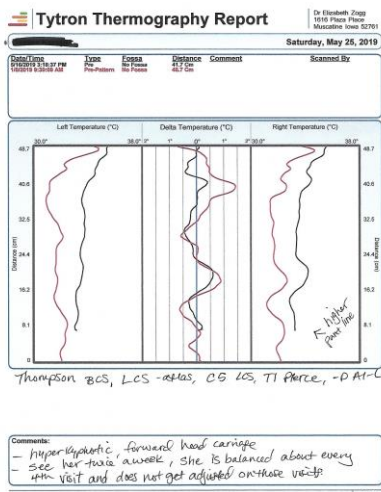
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Some experiments were done at Canadian Memorial and they found:

The most effective places to adjust according to thermography were C1 and Sacrum (Palmer & Logan)

Adjusting in to cold spots seemed to irritate the nervous system/

Bilateral cold areas seemed to indicate a sacral adjustment was needed.

One adjustment worked best. (sometimes less is more)

225

Thermography Room

Windowless room is preferred.

Room temperature should be around 72 degrees F with no drafts or fans blowing air on patient

Backless stool for patient to sit on

Gowns available for female patients and males if they choose

Hair clips

Timer

Fluorescent lighting preferred

Private changing area

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Scan Prep- how to instruct the patient

Avoid hot shower and sunbathing prior to scan

Tell Chiropractor about medications you are taking

Avoid massage, physiotherapy such as tens, ice or heat 24 hours prior to scan

Do not get scanned if sweaty from exercise

Smoking and Caffeine can affect scans , try to avoid 2 – 4 hours prior to scan

Avoid putting on lotions or ointments are back where being scanned

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- Remove necklaces
- Pull up long hair
- Avoid scratching back prior to scan
- Avoid sun bathing prior to scan
- **Acclimate to room temp with back exposed 12 minutes**
- No braces or back supports worn 6 hours prior to scan
- Gowns should not touch area to be scanned

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Take note of any skin abnormalities such as scars or burns on patients back

Explain to patient thermography is safe and is a simple procedure which measures the temperature of the skin surface and does not put anything into the body.

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Inflammation - warm.

Trigger Points - hot spots that are round in shape.

Burns - cold.

Papillomas and subcutaneous lipomas - decreased in temperature.

Hematoma - cold

Malignancy- could be hot or cold

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Thermography is a great tool to re-introduce specificity back to the profession. Adjusting less often with more specificity will result in better outcomes clinically and thermographically.

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Instrumentation keeps the doctor and patient focused on VSC

“IF WE DO NOT USE AN INSTRUMENT AND WE ADJUST OUR PATIENTS EVERY TIME THEY COME IN-WE TAKE CHIROPRACTIC SCIENCE AND ART AND TURN IT INTO A THERAPY.”

“ADJUST ONLY WHEN IT’S NEEDED AND MONITOR WITH AN INSTRUMENT”

Glenn Stillwagon DC PhC

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LEECH FAMILY

JOHNNY
AMBER
MIA
MATEO



236

SOURS FAMILY

WILLIAM
HARPER
BABY CLAIRE



237

RAY FAMILY

BUDDY
FERN



238

JONES FAMILY

HOWARD
BUSTER



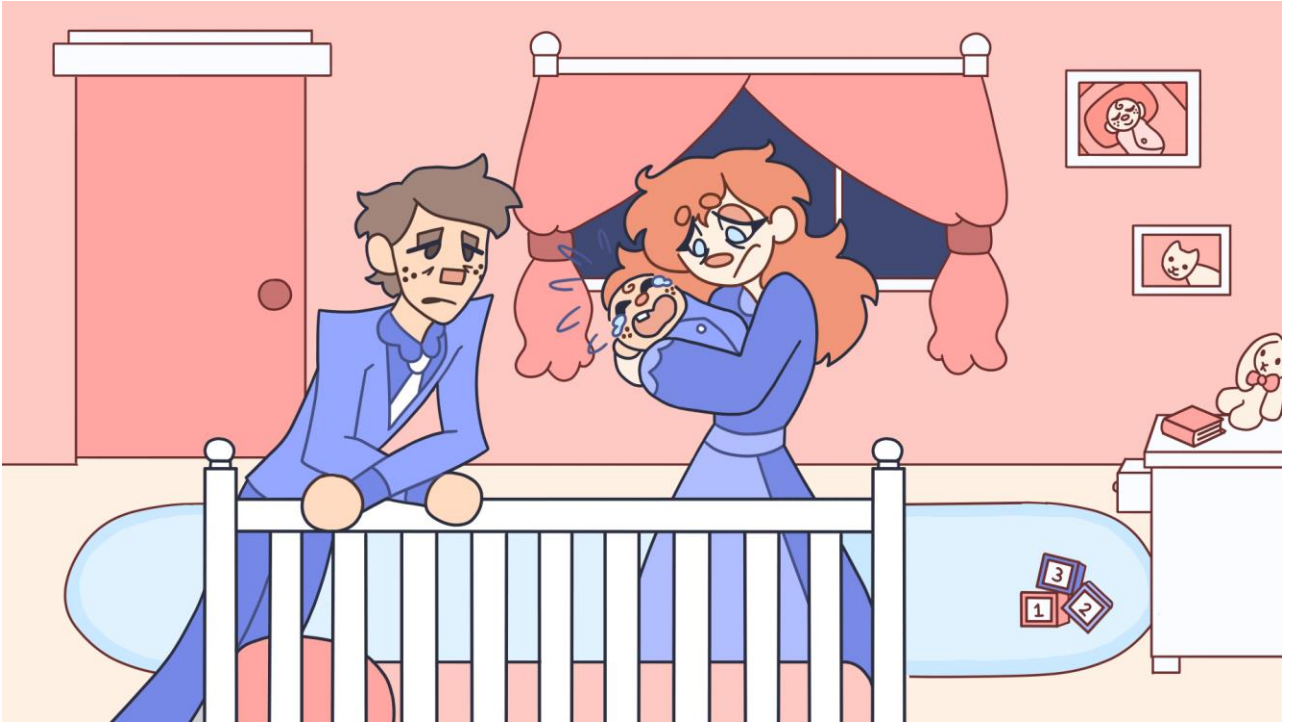
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SKYLAR SPENCER

TEACHER
EXTRODINARIE



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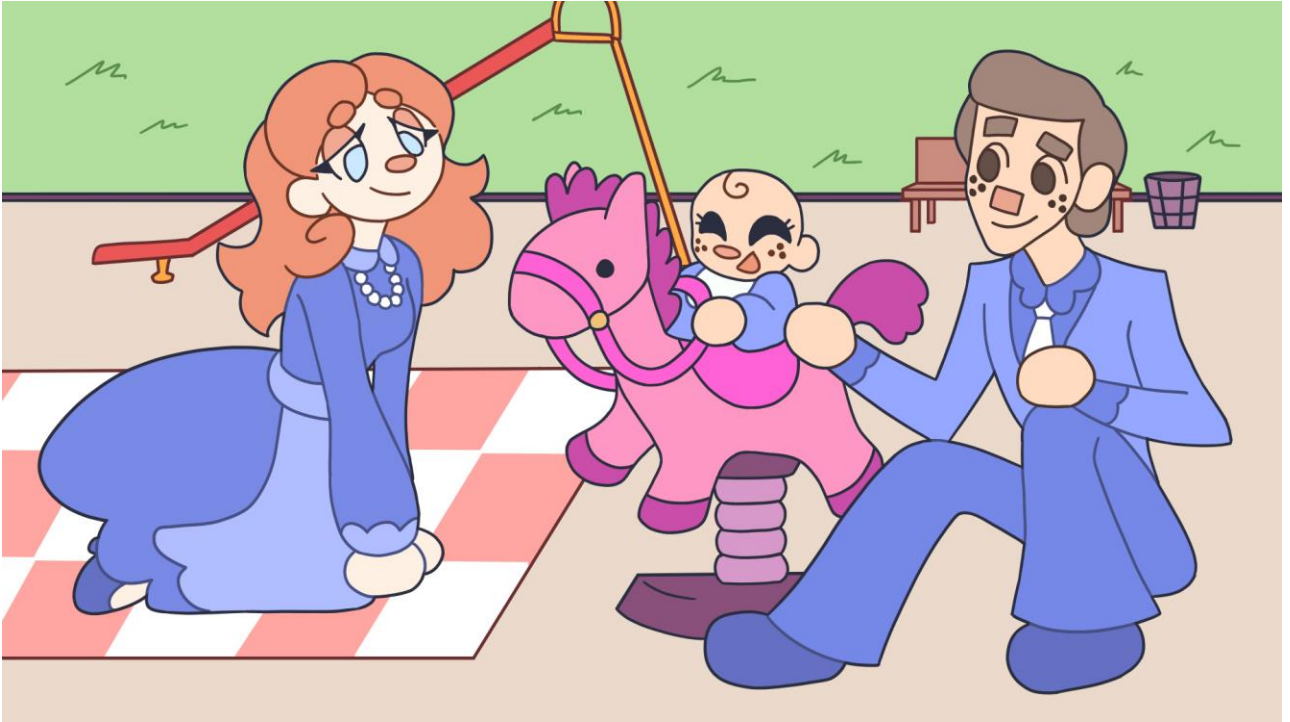
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HIO CHIROPRACTIC CLINIC

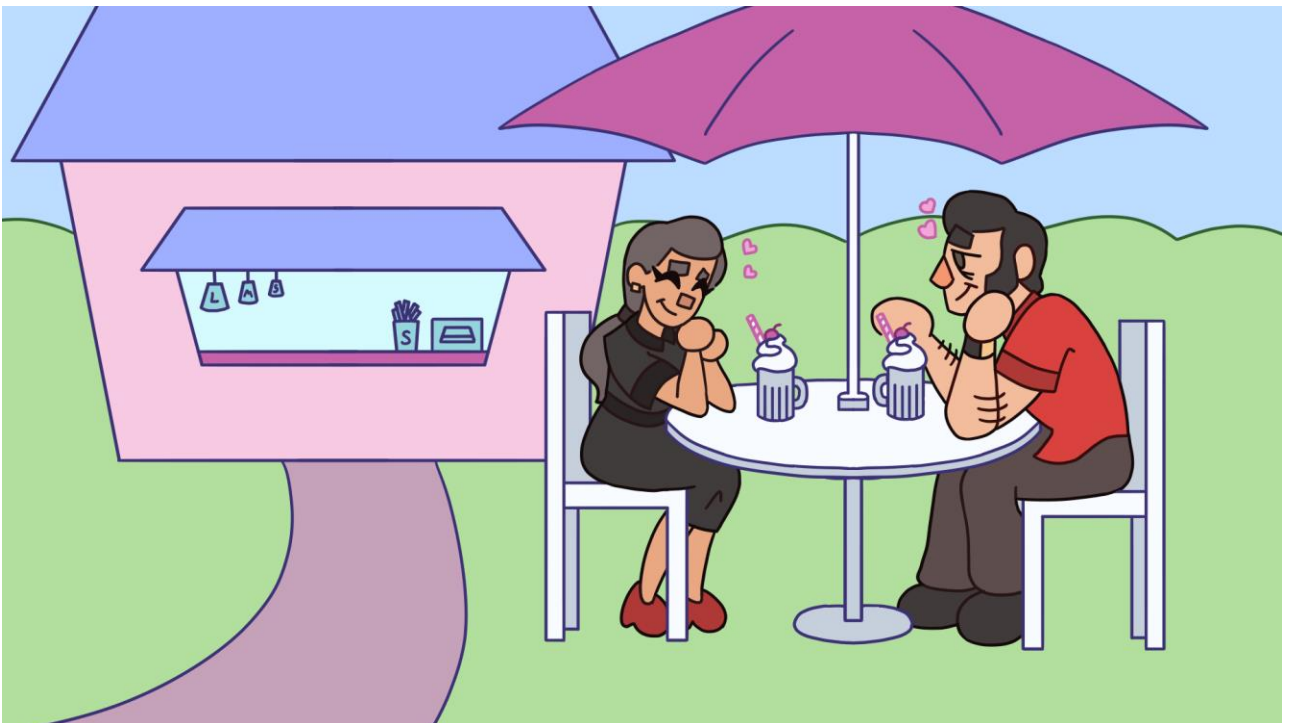
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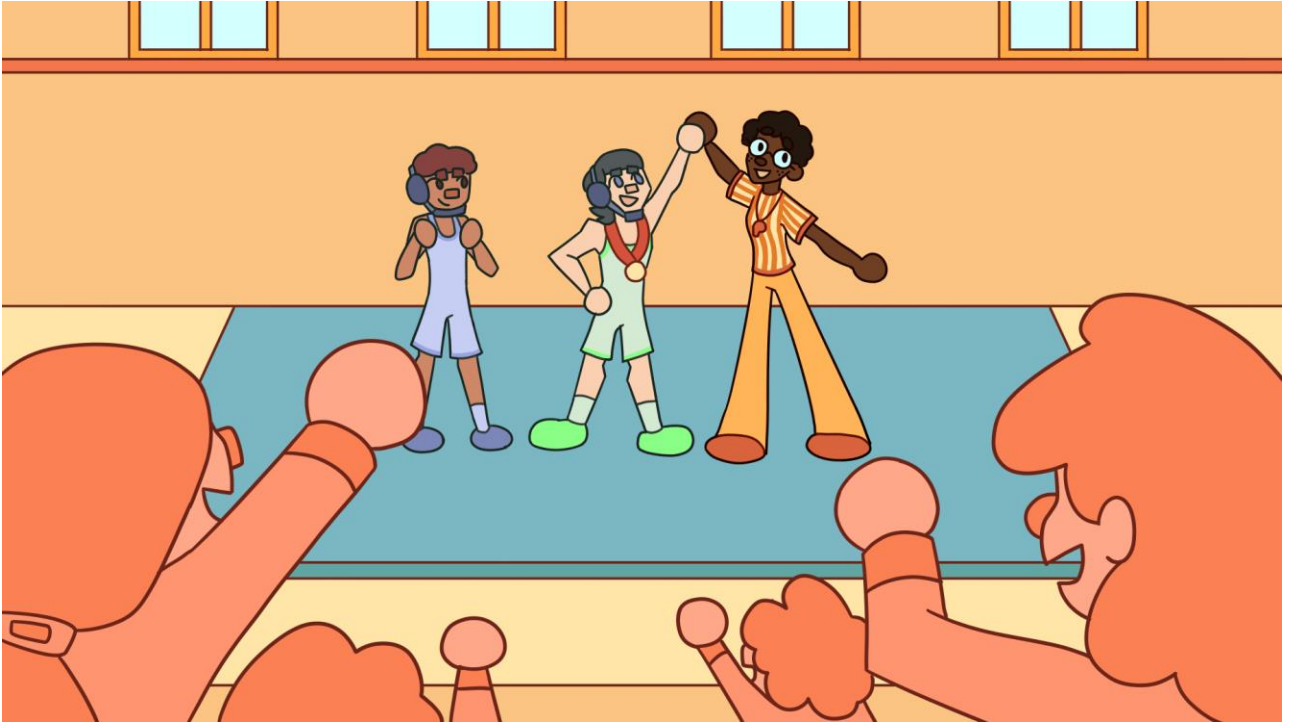
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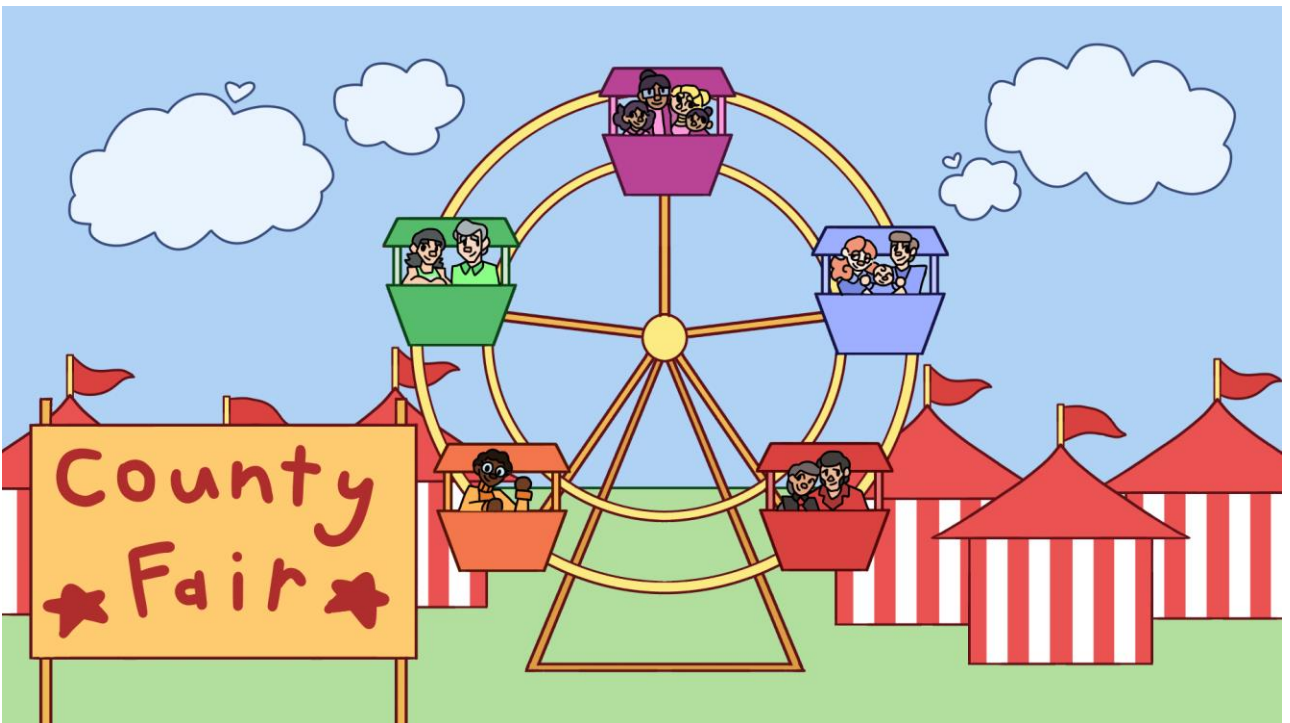
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