



# The Chiropractor's Guide to CLEAR Scoliosis Treatment

**A Resource for Managing Referred CLEAR Scoliosis Patients**

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This information is intended for chiropractic healthcare professionals ONLY. DO NOT ATTEMPT ANY OF THE DESCRIBED ADJUSTMENTS WITHOUT PROPER TRAINING AND LICENSURE.

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This guide is intended to serve as a resource for a chiropractor who has been referred a scoliosis patient from a CLEAR Certified Doctor for local follow-up care after an Intensive Care (IC) treatment session.

There are some aspects of scoliosis treatment that it is very important to recognize. Even more important than knowing what to do is knowing what *not* to do. **Failure to follow these directions when managing a referral from a CLEAR doctor will result in the patient discontinuing care with you, and being referred to a different chiropractor.**

If you have any questions about the information in this guide, contact the CLEAR Certified Doctor who referred the scoliosis patient to you for follow-up care.

**CLEAR Scoliosis Treatment** begins with the patient performing warm-up exercises. These include side bends and spinal rotation exercises. The patient has been provided with instructions and equipment to perform these warm-up exercises correctly. Please allow the patient adequate time to perform these warm-up exercises prior to the adjustment.

**Massage** may be provided to scoliosis patients prior to their adjustments. The masseuse or CA should pay close attention to the paraspinal muscles on the convexity of the curvature.

**Flexion-distraction therapy** may also be provided prior to the adjustments, if you have the requisite equipment. Please do not utilize any scoliosis brackets or straps unless you have attended the CLEAR Scoliosis Seminar and have experience in doing so.

**AVOID** the use of electrical muscle stimulation, spinal decompression therapy, manual adjusting of the neck, P-A adjusting of the thoracic spine (unless indicated to do so by the treating doctor in cases of kyphoscoliosis), compressive lumbar side-posture adjustments, and extension-compression devices.

**Spinal exercises** have already been provided to the patient. Please do not modify the patient's exercise program without first consulting with the CLEAR Certified Doctor who referred the patient to you.

**Nutritional counseling** is a part of the CLEAR Scoliosis Treatment, and supplements & vitamins have already been provided to the patient. Please do not provide the patient with additional nutritional supplements without first consulting with the CLEAR Certified Doctor who referred the patient to you.

## **Supine Anterior Thoracic Adjusting**

Millner & Dickson studied the sagittal profiles of people with scoliosis extensively, and their conclusion was that a loss of the normal sagittal curves of the spine (especially the thoracic kyphosis) predisposes the spine to buckling and the development of scoliosis. For this reason, P-A adjusting of the thoracic spine will lead to a worsening of the scoliosis in most cases. Rather, the thoracic spine should be adjusted with the patient in a supine position.

First, have the patient cross their arms in front of their chest and bring the elbows as close together as possible.

Second, the doctor should place a wooden dowel or similar device (such as a tube of chapstick) at the base of their fingers and curl their fingers around it. This hand will be placed underneath the patient at the level of T12, with the spinous processes lined up in the middle of the palm, allowing the thenar and the fingers to contact the laminae/transverse processes.

Third, the doctor should use their opposite hand to reach over the patient and either grasp the underside of the table, or stabilize the forearm. The adjusting force is not so much a drop, as it is a squeeze – a gentle increase in pressure until the force transferred through the ribs meets up with the hand beneath the patient and the thoracic vertebrae move posteriorly, into the middle of the open palm.

Repeat this maneuver, gradually moving up the spine, until reaching the level of T4. The adjusting force should follow the angle of the ribs with a slight I-S component in the lower thoracic spine, gradually decreasing in the upper thoracic spine.

It is important to use an open palm, not a closed fist, to adjust the spine. Using a closed fist results in a P-A force to the thoracic spine. When the palm is opened, the knuckles and thenar stabilize the ribs and allow the vertebrae to translate posteriorly. When the fist is closed, the contact constrains the vertebrae and a squeeze or a drop in this position will result in a P-A force in the thoracic spine, worsening the normal thoracic kyphosis and further destabilizing the spine in the coronal plane.

## **Manual, Drop-Piece, or Instrument Adjusting of the Lumbar Spine**

In cases where there is a loss of the lumbar lordosis, a retrolisthesis of L5, or a decrease in the sacral slope (Ferguson's angle below 23 to 33 degrees), a bilateral thenar contact or mechanical adjusting instrument with a double-prong stylus may be applied to the lumbar region with the patient in a prone position. A drop piece can aid in manual adjusting.

In cases where the reverse is true (spondylolisthesis of L5, hyperlordosis of the lumbar spine, or an increased sacral slope/Ferguson's angle), alternative protocols may be employed. CLEAR recommends drop-assisted or instrument adjusting of the sacral apex in this scenario. Thompson adjustments for spondy's are also highly effective clinically (the Field and Institutional Methods).

## **Side-Posture Adjusting of the Pelvis**

Side-posture adjusting should NEVER be performed with compressive forces. Rather, the line of drive should be a tractive-type force through the shaft of the femur. Most right thoracic, left lumbar double-major curve patterns will have a right AS hip and a left PI hip; this will be reversed in left thoracic cases. Adjust for lumbo-pelvic rotation accordingly.

## **Instrument Adjusting of the Cervical Spine**

For a more detailed description, please watch the **Restoring the Cervical Lordosis** seminar, available for free at [www.CLEAR-Institute.org](http://www.CLEAR-Institute.org), by clicking on the DC subheading of the Doctor's Resources section.

NEVER ATTEMPT ANY MANUAL ADJUSTING OF THE CERVICAL SPINE! Laxity of the alar ligaments is a near-universal finding in scoliosis patients, and these ligaments play a significant role in joint sense and proprioception. If they are continually stretched through maneuvers involving excessive lateral flexion or rotation, this instability can be aggravated and the patient's condition may deteriorate.

All cervical adjusting MUST be performed with the aid of a mechanical adjusting instrument, such as the ArthroStim. The adjusting instrument must be adaptable for both double and single styluses. The double stylus may be used for P-A adjusting of the cervical spine to re-inforce the cervical lordosis. The single stylus may be used for adjusting C1 and C2.

ONLY adjust C1 and C2 with a mechanical adjusting instrument, taking into account laterality and rotation as instructed by the CLEAR Scoliosis Doctor who referred the patient to you. If you have any questions, contact them directly.

### **After the Adjustment**

Ensure the upper cervical spine is in alignment through neurological leg length testing, palpation, or a similarly suitable method. Refer below for instructions on how to perform a neurological (functional) leg length test. While we recognize the lack of scientific validity for this form of chiropractic subluxation testing, anecdotal and clinical experience suggest the usefulness of such testing as opposed to repeated A-P open mouth x-rays. Please feel free to discuss your preferred method of upper cervical subluxation analysis with the CLEAR Certified Doctor who referred the patient to you; with their approval, other methods may be used to assess proper correction of upper cervical subluxations.

After the adjustment, the patient may be allowed to return home. They should be reminded to perform their prescribed spinal exercises and balance training exercises, as well as their Scoliosis Traction Chair (if they have one at home).

Please do not apply any adjunctive therapies to the patient without first consulting with the CLEAR Certified Doctor who referred the patient to you for follow-up care!

## Interesting Information about Scoliosis

Scoliosis is classically defined as the presence of a lateral deviation of the spine that measures greater than 10 degrees using Cobb's method, combined with an Adam's Forward Bending test that is positive for rotation. To fit the definition of a true structural scoliosis, the lateral deviation should not correct spontaneously on lateral bending A-P x-rays. If it does, it is defined as a functional or postural scoliosis. This is also the criteria for determining which curve is primary and which is compensatory; a primary curve will not correct on lateral bending.

It is important to note that, while scoliosis is characterized as a deviation from midline in the frontal plane, it truly is a three-dimensional disorder. A paper published in *Spine* in 2007 by Pomerat *et al* states that axial rotation of the vertebra occurs either prior to or during the onset of scoliosis, but that scoliosis cannot occur unless this rotation is present (Lovett sign). Morningstar & Stitzel found that 88% of patients with severe scoliosis had a kyphotic cervical curve. The degree of lumbar lordosis demonstrates a significant correlation with the progression of the scoliotic curvature in cases of adult scoliosis.

According to the National Scoliosis Foundation, scoliosis is associated with a reduction in life expectancy, decreased cardiopulmonary function, headaches, and neck, back, hip, knee, & leg pain. Ascani *et al* followed people with scoliosis for almost 50 years, and found the mortality rate of people with scoliosis to be twice as high when compared to the general population. An estimated 100,000 cases of scoliosis are diagnosed every year – nearly as many as cases of breast cancer. Every year, 2.7 million visits are made to chiropractors for scoliosis or scoliosis-related complaints. The Bone and Joint Decade states the yearly financial burden of scoliosis upon our society to be as high as 2.7 billion dollars annually. The incidence of scoliosis surgery has been increasing since 1980, and with the growth of the “baby boomer” population, a spinal disorder which was once thought to be primarily a disease of adolescents has now become a significant source of concern for adult and elderly patients as well.

The future of chiropractic in the coming decades will depend greatly on our ability to earn the title of “Spinal Experts.” The current paradigm of scoliosis treatment in the United States does not recognize chiropractic care. Currently, scoliosis screenings across the United States are in danger of being discontinued due to insufficient funds. When a mild case of scoliosis is initially diagnosed, the standard routine is to do nothing, and rather merely to monitor its progression. Chiropractors who have an understanding of the biomechanics of scoliosis are in a unique position to provide early detection & intervention strategies, and fulfill those needs which are currently not being addressed by any other healthcare specialty.

## **Cobb Angle**

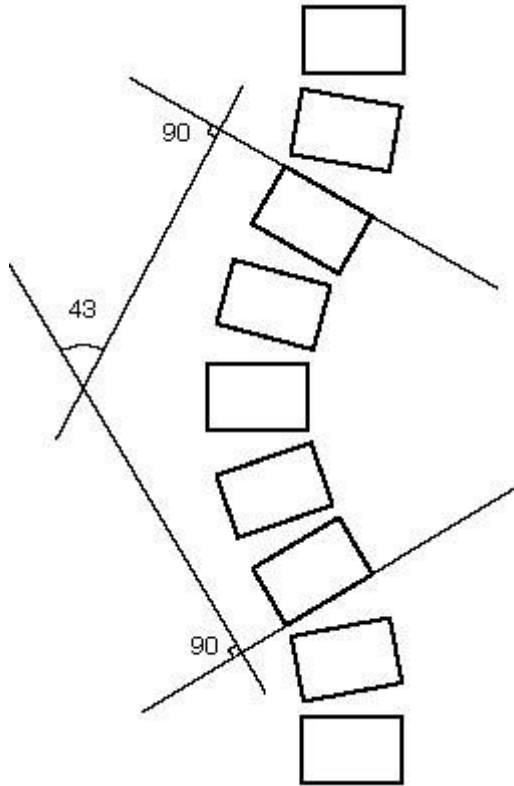
It must be recognized that there is an inherent liability in treating a patient with scoliosis with chiropractic care when standards of care are not performed. The current medical Gold Standard for the radiographic assessment of scoliosis is Cobb Angle. If a patient who has been identified as having scoliosis is under the supervision of an orthopedic surgeon, the orthopedist will take regular full spine x-rays to monitor progression of the scoliosis. If a previously non-progressive, stable scoliosis suddenly begins to progress after a patient initiates chiropractic care, the orthopedic surgeon will have recorded evidence of the progression of the Cobb Angle. Not measuring Cobb Angle does not insulate the chiropractic healthcare provider from the assumed liability in this regard.

It is preferable from a liability standpoint to measure the Cobb Angle on a regular basis to be aware of the patient's current health status. If the patient demonstrates no effect from care or a sudden worsening, the treating physician is obligated to either refer the patient out to a different healthcare provider or make alterations to the patient's treatment plan.

Cobb Angle, being a two-dimensional representation of a three-dimensional condition, is inherently flawed. The rotation and lateral translation of the vertebrae may change, but as long as the tilt of the two terminal vertebrae is identical, there will be no change in the Cobb Angle.

For all of its flaws, however, the Cobb method of scoliosis can be considered objective and relatively reliable when performed properly. The problem is that many doctors are unfamiliar with the proper way of analyzing a scoliosis.

To measure Cobb Angle, identify the top vertebral body that is maximally angled or tilted. Draw a line on the top of this vertebral body extending toward the apex of the curve. Next, identify the last vertebral body that is maximally angled or tilted and draw a line on the bottom of this vertebral body extending toward the apex of the curve. On each of these two lines, draw a perpendicular line (90 degree line) such that the perpendicular lines intersect. The angle between the intersecting perpendicular lines is the Cobb angle.



The most common reason for error when comparing radiographs is the utilization of different terminal vertebrae; this is akin to comparing apples to oranges. For comparison purposes, the same superior & inferior vertebrae must be utilized on all subsequent x-rays.

The standard measurement error for Cobb Angle is considered to be 5 degrees; thus, unless a curve demonstrates more than 5 degrees of change, it is not considered to be significant.

### **Historical Highlights**

Scoliosis is perhaps one of the most complex spinal disorders that a doctor can choose to work with, and the history behind scoliosis is similarly inherently complex & fascinating.

In all likelihood, scoliosis has existed ever since humans began walking upright. It is unique to bipedal erect hominids; namely, humans. The only other mammals known to



develop scoliosis (outside of a laboratory) are koalas (and in their cases, it's a very distinct & different entity from human scoliosis).

Hippocrates & Galen described cases of scoliosis in their writings, and developed a system of treating it using spinal traction and lever arm forces. The earliest scoliosis brace can be traced back to Paul of Aegina, who in 650 AD treated scoliosis with a combination of wooden supports and bandages. The first metal brace was developed by Ambrose Pare in 1575, and remained in use for nearly 100 years after its inception.

Scoliosis surgery inspired the first recorded instance of medical surgeons disputing in print & in court. Jules Rene Guerin (1801-1886) first began using surgical methods in 1835 to sever the muscles & tendons of 1,349 patients with scoliosis. The post-operative results were quite horrifying, and stirred a great amount of controversy, leading to what many experts consider to be the first recorded instance of medical surgeons disputing in print & in court, and ending in one of the most famous orthopedic lawsuits in history: Guerin versus Malgaigne. This defamation trial ended in Malgaigne's favor and helped to establish an important precedent for open criticism of scientific papers.

The first spinal fusion surgery was performed by Dr. Russel Hibbs in 1911, who adapted his technique for use in scoliosis three years later. Despite necessitating the patient spending six to twelve months spent in a body cast after the operation, his surgery remained in use for the next fifty years, until Dr. Paul Harrington invented the Harrington surgery in 1963. While chiropractors may encounter patients in their practice who had this procedure done in their teens, it is important to note that it is no longer being performed today. For this reason, you should not use the term "Harrington rods" to refer to modern-day scoliosis surgery procedures or instrumentation.

Currently, the systems of spinal instrumentation in use are diverse and varied, and now include "fusion-less" approaches such as vertebral body tethering, vertebral body stapling, and expandable prosthetic ribs.

Besides the development of bracing and surgery, there has only been one other treatment for scoliosis introduced in the medical community - electronic muscle stimulation – in the 1970's. Unfortunately, after roughly a decade of clinical usage, research began to surface that cast doubts upon the efficacy of this treatment. Today, it is only used as a treatment for scoliosis by chiropractors who are uneducated about its ineffectiveness. No hospitals or scoliosis specialists currently employ electronic muscle stimulation as a treatment for scoliosis.

### **Research on Traditional Chiropractic**

*"Be wary of using research the way a drunken man uses lampposts –  
for support rather than illumination."*

-Andrew Lang

Diversified chiropractic adjustments combined with postural counseling & heel lifts are not effective at reducing the severity of a scoliotic curve. (Lantz 2004)

An article recently published in *Spine* followed 123 patients for two years as they underwent non-surgical treatment for their scoliosis (including chiropractic care). Patients with mild scoliosis demonstrated a slight improvement in pain, but patients with moderate or severe scoliosis actually demonstrated a more pronounced worsening in their pain levels. None of the groups demonstrated any significant improvement in HRQOL surveys or other objective measurements.

A meta-analysis of the literature on the topic of manual therapy & scoliosis failed to uncover enough evidence to support or discourage the use of manual therapy as a treatment for scoliosis (Romano 2008).

**Research suggests that generalized chiropractic adjusting is not effective in reducing the severity of scoliosis. The CLEAR Scoliosis Institute developed a scoliosis-specific protocol that offers greater potential for consistently positive results. It is the goal of the CLEAR Scoliosis Institute to elevate the level of service provided to scoliosis patients by chiropractors, as well as the level of evidence on the chiropractic treatment of scoliosis.**

### **Research on CLEAR Chiropractic**

*“Scoliosis treatment using a combination of manipulative and rehabilitative therapy”* was published on September 14<sup>th</sup>, 2004. Currently it is listed as the Most-Highly Accessed Article of All-Time in its publishing journal, *BMC Musculoskeletal Disorders*, with over 46,000 hits. The runner-up has just over 30,000 hits.

In this study, 22 patients of diverse ages & curve severity underwent a 4-6 week treatment regimen. Three patients were dismissed for non-compliance with the mandatory exercise protocols. The nineteen who remained experienced an average reduction in their Cobb Angle of 17 degrees. None of the subjects worsened. Eight of the nineteen were no longer classified as having clinically-diagnosable scoliosis post-intervention.

Additional follow-up studies have been submitted and are currently awaiting acceptance in peer-reviewed journals; you can view our research online at [www.CLEAR-Institute.org](http://www.CLEAR-Institute.org). These studies have demonstrated a consistent average reduction in Cobb Angle of roughly 35% after twelve visits, in populations from 9 to 84, with Cobb Angles as small as 5 degrees up to 124 degrees. Improvements in quality of life, lung function, and pain levels were also noted.

Interestingly enough, re-emergence of a previously absent superficial abdominal reflex (which is an indicator of underlying spinal cord tethering in scoliosis patients) was also noted in a percentage of the patient population.

### **Clinical Pearls**

The first step in correcting the abnormal coronal deviation is restoring normal sagittal biomechanics.

CLEAR Institute offers a free 2-1/2 hour “Restoring the Cervical Lordosis” seminar which is available for download on our website ([www.clear-institute.org](http://www.clear-institute.org), Doctors’ Only, Seminars).

The three-part seminar series is offered in person twice a year at Parker University, and Parts 1 & 2 can also be taken online (standard student discounts apply). Students can “test out” of having to re-take the seminar series as doctors in order to achieve CLEAR certification.

When working with cases of scoliosis, avoid rotational cervical maneuvers which can aggravate upper cervical instability and cause a worsening of the cervical lordosis (Trojanovich 1998). P-A thoracic adjusting should also be avoided, as this can worsen the already diminished thoracic kyphosis.

In a case of a left lumbar scoliosis, the left psoas needs to be engaged, and the right psoas needs to be released. (Yes, that’s not a typo – patients should exercise the left psoas in a left lumbar scoliosis)

Most cases of idiopathic scoliosis are NOT the result of hemispherical imbalance: *Lateralization is undoubtedly a factor in scoliosis, but does not have a simple causal relationship, probably deriving from the underlying scoliotic process, rather than contributing to it* (Goldberg 2006). *The present data does not support the concept of a generalized brain asymmetry in idiopathic scoliosis.* (Kimiskidis 2007)

Infantile scoliosis afflicts males more often than females, and the gender ratio is roughly equal in juveniles and in severe cases of scoliosis. Females have a higher risk of progression; this is most likely due to the hormonal influences affecting ligament laxity in menarche, pregnancy, and menopause.

Forward head posture combined with a flexion malposition of C0/C1 (Librarian Posture) is a common finding in patients with an active, developing scoliosis. Mechanical adjusting instruments are the most effective way to correct the specific upper cervical subluxation patterns commonly observed in AIS.

Many scoliosis patients manifest a high hip and a high shoulder on the same side; if you note this in a patient, it is considered abnormal spinal biomechanics and should be investigated further.

Electrical muscle stimulation should never be used as a long-term treatment for scoliosis.

When in doubt, refer out! Severe or rapidly progressing cases of scoliosis should be managed by a chiropractor with advanced training in this disorder.

### **Recommended Reading List**

Scoliosis and the Human Spine - Martha Hawes PhD

Upper Cervical Subluxation Complex: a Review of the Chiropractic and Medical Literature - Kirk Eriksen

Evidence Based Chiropractic Practice - Michael Haneline DC PhD

The Physiology of the Joints, Volume 3: The Spinal Column, Pelvic Girdle, and Head - Kapandji

Scoliosis: Diagnosis and Management, Whiplash Associated Disorders, Soft Tissue Pain & Disability, Low Back Disorders: a Medical Enigma - Rene Cailliet MD

The Failed Spine - Szpalski & Gunzburg

The Spinal Engine - Serge Gracovetsky

The Burden of Musculoskeletal Diseases in the United States - Bone and Joint Decade

Scoliosis - Fred Barge DC

Research into Spinal Deformities, Volumes 1 – 6

Spinal Disorders – Boos & Aebi

The Biology of Belief - Bruce Lipton

The Genie in Your Genes – Dawson Church PhD

The Genetics and Development of Scoliosis - Kusumi

The Brain that Changes Itself – Norman Doidge

The Journey of Scott Haldeman – Reed Phillips

The Body Electric – Robert Becker

The Molecules of Emotion – Candice Pert

Survival of the Sickest – Sharon Moalem