

[Top 10 Reasons to Choose the CLEAR Solution for your Scoliosis](#)

1) Research proves our specialized approach to scoliosis achieves results.

The article, "*Scoliosis treatment using a combination of manipulative and rehabilitative therapy: a retrospective case series*," published by Drs. Morningstar, Woggon, & Lawrence in BMC Musculoskeletal Disorders, on September 14th, 2004, was a landmark in the realm of conservative scoliosis treatment. Within two years of its publication, it achieved the status of Most-Highly Accessed Article of All-Time in this journal, and continues to hold this title as of 2009, with over 36,000 views (number two has just under 24,000).¹

Since 2004, there have been additional reports in the literature regarding the efficacy of chiropractic or osteopathic manipulative therapy in the treatment of scoliosis, in combination with deep tissue massage and physical therapy, that have demonstrated positive results.²⁻⁴

Our most recent research submission followed 140 patients from ages 9 to 84 with Cobb Angles ranging from 5 to 109, and demonstrated an average reduction of 37.7% after 12 visits. 23 patients were no longer classified as having clinically-diagnosable scoliosis after treatment.

Unlike a surgical or braced reduction of the Cobb Angle, the reductions achieved through our methods also correlate with improved lung function, increased rib expansion, decreased pain, increased physical functioning, and better quality of life overall.

2) Bracing does not change the course of scoliosis.

The purpose of bracing is not to correct scoliosis, but to stop it from getting worse. Unfortunately, even with proper compliance (wearing the brace for 23 hours every day), it frequently fails in doing so. Dolan & Weinstein documented that 23% of patients who wore a brace still ended up undergoing spinal fusion surgery.⁶ In comparison, 22% of patients who did nothing underwent surgery for their scoliosis later in life. The evidence in support of bracing is extremely poor, earning an overall rating of "D" in a review of the scientific literature.⁷

Bracing can be very emotionally-scarring, at a time in life when "fitting in" means everything, wearing a brace can be a traumatic experience in a young person's life, with some people going so far as to say it left them with a "psychological scar."⁸ In addition to the emotional effects, the physical side effects of wearing a brace can include pain, skin & bone problems, and impairment of normal lung function.⁹⁻¹³

3) Surgery does not cure the disease of scoliosis, but rather replaces one deformity with another.¹⁴

Many people choose surgery because they just want their worries about scoliosis to be over. However, scoliosis surgery is not the final solution; merely an irreversible one. Scoliosis can continue to get worse even after spinal fusion, and over 20% of patients require more than one operation.^{15,16} Furthermore, 40% of patients are legally disabled 16 years after the procedure.¹⁷ Long-term evidence suggests that living with a fused spine may be worse than living with a curved one. 38% of patients stated that, if they had the chance to go back in time, they would not have undergone the surgery.¹⁸ 76% of patients suffer from back pain after 10 years.¹⁶ After 15 years, patients report increased difficulty sitting, standing, carrying, bending at the waist, participating in sports, lying on their backs or sides, lifting, performing household chores, and driving a car.²⁰ In every patient who undergoes spinal fusion surgery, there is a permanent loss of spinal flexibility & function.²¹ The documented risks of scoliosis surgery are bone fragments or instrumentation penetrating into the spinal canal; breakage of the implants; and, compression of the spinal nerves.²² This can lead to neurological deficits such as partial or total paraplegia, quadriplegia, or peripheral nerve damage – which may occur immediately after the operation, or as much as 10 years later.²³ Surgery does not reduce rib deformity; instead, thoracoplasty (shaving down the ribs) or rib removal is often recommended for this purpose. This can result in a serious & permanent impairment of normal lung function, and can in fact cause the scoliotic curvature to progress.²⁴ Even if the rib hump does improve after spinal fusion, in the majority of patients, the improvement is temporary, and eventually the situation is worse than it was before.²⁵

The truth is, spinal surgery is an invasive and dangerous procedure, and one that should only be undertaken after all other options have been exhausted. Unfortunately, it is increasingly being recommended as the first resort for children with progressive scoliosis and adults with painful scoliosis. Once done, it cannot be undone; to operate or not is an important decision, and all factors should be considered carefully before committing to spinal fusion surgery.²⁶

4) Researchers around the world recognize the need for a better way.

Provided the use of a complete comprehensive approach, there is very little doubt that it is possible to reduce the need for surgery in the treatment of scoliosis.²⁷

It cannot be argued against that there is a need for the advancement of research into manners by which a mild case of scoliosis can be prevented from developing into a serious visible deformity.²⁸ If bracing and surgery were successful, reliable, and effective ways of treating scoliosis, there would not be a need for advancement into new treatment methods. Also, there

is increased need for physicians of all specialties to collaborate in the realm of scoliosis treatment.²⁹ CLEAR Institute is fulfilling these needs by attending conferences of international scoliosis experts, working with recognized scoliosis specialists in all fields of healthcare, participating in debates about the future of scoliosis treatment, and providing more options to people living with scoliosis.

5) Our treatment addresses scoliosis 3-dimensionally, in accordance with established laws of biomechanics, to correct the spine in every dimension.

It is well-recognized that two of the main factors involved in the progression & etiology of idiopathic scoliosis (IS) are biomechanical and neuromuscular.³⁰ It is also proposed that the biomechanical and neuromuscular factors involved in the progression of scoliosis contribute to a cyclical pattern that leads to further progression ('vicious cycle').³¹

Millner & Dickson described a biomechanical conceptual understanding of scoliosis in 1996 when they pointed out that, *"For centuries, engineers have recognised that the mechanical behaviour of a column under load is influenced by geometry, as well as by material properties; it is clear that the spinal column also obeys these well-described laws."* They then went on to extrapolate on this concept when they described scoliosis as a viscoelastic, three-dimensional "buckling" of the spine in both the coronal (side-to-side) and sagittal (front-to-back) plane, and noted that successful reproduction of scoliosis in an animal model occurs only when the normal sagittal alignment of the spinal column has been disrupted.³² This sagittal disruption has been noted and confirmed by several other authors.³³⁻³⁸ Researchers have even been able to predict the thoracic kyphosis by evaluating the coronal thoracic curvature, the lumbar lordosis, and the slope of the first lumbar vertebra.³⁹ New research has discovered that a kyphotic cervical curvature occurs more frequently in patients with severe scoliosis than in a normal population.⁴⁰ Axial rotation of vertebrae has been implicated as a risk factor for progression of scoliotic curvature.⁴¹ A positive correlation between the degree of the sagittal & axial disruption and the magnitude of the resultant lateral curvature has been documented.⁴² It has also been documented that spinal imbalances have the capability of producing forces which can influence curve progression.⁴³ It could be taken as an axiom that if certain forces are capable of influencing progression, other biomechanical forces should be capable of influencing the regression of spinal curvature, and it has been suggested that a chiropractic physician who understands the biomechanics of scoliosis may have a rationale for the treatment of scoliotic curvatures.⁴⁴ The etiology behind so-called idiopathic scoliosis is extensively biomechanical and driven in a large part by neuromuscular imbalances.⁴⁵ Addressing & reversing the neuromuscular & biomechanical imbalances is the goal of CLEAR treatment, and this treatment approach is effective in patients of all ages.

This is supported by research which suggests that structural deviation of the nucleus pulposa can greatly affect the progression of scoliosis.⁴⁶⁻⁴⁸ Physical rehabilitation has been demonstrated to be successful in the management of herniated nucleus pulposa.⁴⁹ Physical exercises, postural remodeling, and proprioceptive neuromuscular re-education, combined with manual therapy that is performed with the purpose of achieving specific structural corrections (rather than simple mobilization of a spinal joint), are effective ways of altering the biomechanical forces affecting the spine and thus vertebral column loading. As stated by several preeminent scoliosis researchers, the primary factors influencing progression of the scoliotic spine are biomechanical (shear forces and asymmetrical loading of the vertebrae leading to vertebral wedging as per the Heuter-Volkman Law, often referred to as the 'vicious cycle' in discussions regarding the pathogenesis of scoliosis), so a spinal biomechanical approach to treatment with the goal of reducing and reversing these forces is logical and has been proposed by other authors.^{43,44} This vicious cycle has been shown to develop in 3 dimensions, not merely in 2, and so biomechanical treatment aimed at reducing axial & sagittal deviation of the spine appears every bit as necessary as reduction of the lateral deviation.^{31,32}

6) The CLEAR approach is the only system that re-trains the brain and spine to work together.

It has been well-documented that patients with scoliosis demonstrate a significant increase in neuroanatomical abnormalities of the corticospinal tract, as well as neurophysiological abnormalities, especially in the areas of vestibular function, proprioception, vibratory sensation, postural reflex mechanisms, abnormal reflex processing, and disordered postural equilibrium.⁵⁰⁻⁶⁰ Lateralization of neurophysiology also occurs more frequently in patients with idiopathic scoliosis (IS), and this can be correlated to the convexity of curvature.⁶¹⁻⁶³ However, it has been suggested that this laterality is a result, rather than a cause, of scoliosis.⁶⁴ While many authors have suggested that brain asymmetry may play a role in the etiology of scoliosis, one recent study did "*not support the concept of a generalized brain asymmetry in idiopathic scoliosis,*" but noted instead that the trend towards asymmetrical neurophysiology was "*probably representing subclinical involvement of the corticospinal tracts secondary to mechanical compression.*"⁶⁵ The goal of the chiropractic manipulative therapy provided by CLEAR doctors is to reduce this mechanical compression and thus restore normality.

Neurophysiological compensations may develop as a mal-adaptation to disordered spinal structure; similarly, disordered spinal structure may create muscle imbalances & exacerbate existing neuromuscular imbalances.⁶⁶

Scoliosis has been induced in an animal model following unilateral vestibular compromise (when one part of the balance system of the body was disrupted).⁶⁷ However, scoliosis only developed when the animals were subjected to gravity, thus lending further credence to the statement made by Stokes, Burwell & Dangerfield that, *“independent of whether a scoliosis is congenital, neuromuscular, or idiopathic, mechanical factors become predominant relative to initiating factors during rapid adolescent growth, when the risk of curve progression is greatest”* or, as expressed succinctly by Hawes & O’Brien, *“no matter what you believe to be the cause of AIS, ultimately the problem can be reduced to the production of an imbalance of forces along the spine.”*^{31,68} The simplest explanation for the cause of scoliosis is a biophysical adaptation to gravity. Understanding *why* this adaptation occurs is paramount to designing an effective treatment regimen.

Using innovative concepts such as whole-body vibration and advanced spinal weighting techniques to improve the body’s posture & balance and re-train how the brain activates different muscles in response to gravity, we are able to address the neuromuscular compensations that occur in scoliosis.⁶⁹⁻⁷²

7) We recognize both the genetic and the environmental factors in scoliosis, and evidence supports the concept that by treating the biomechanical & neuromuscular risk factors, you can change your genetic risk factors.

It has been recognized since 1980 that scoliosis is a multi-factorial disease, and is not associated with any one particular gene.⁷³ There is no 100% concordance of symptoms or prognosis in monozygotic twins; family history has not found to be predictive in any way of curve progression or severity; and for most individuals, there is no defining evidence of an inherited disorder.⁷⁴⁻⁷⁶ Interestingly enough, sagittal spinal profile has also shown to have familial tendencies.⁷⁷ The best inference that can be made at this time is that the *“interaction between genetic and environmental factors causes IS.”*⁷⁸

These genetic risk factors can be identified using a test called ScoliScore, which is currently available in every CLEAR-certified clinic. This test predicts the chance that a scoliosis will progress to the point of requiring surgical intervention, and is effective in mild curves in skeletally immature spines. This is just one way we show our commitment towards incorporating the latest research & technology to serve our patients.

Medical doctors have been able to reduce the genetic risk factors in patients at a high risk for developing prostate cancer through dietary changes and lifestyle modification.⁷⁹ There is every reason to believe that CLEAR treatment can change an individual's genetic risk for seeing their scoliosis get worse by restoring normal spinal alignment, and thus reducing the biomechanical & environmental factors that contribute to progression of the curvature.

8) We use x-ray technologies that are significantly safer, and more clinically applicable, than traditional full-spine radiography.

The x-rays that are taken by CLEAR-Certified doctors expose the patient to significantly less radiation than a standard full spine film. According to the American Nuclear Society (www.ans.org), the average person is exposed to roughly 300 mR of naturally-occurring radiation every year. The seven "spot" views of the spine that are taken by a CLEAR doctor total 295 mR. By comparison, a single full spine film exposes the patient to 300 to 400 mR of radiation. The reason that a full spine film is so much greater is because the strength of the x-ray beam must be turned up to adequately penetrate all of the patient's tissues. In addition, the phenomenon of "scatter" causes x-ray penetrance to decrease as the film size becomes larger; this is why a small "spot" view is significantly less dangerous. X-rays in truth are one of the least dangerous diagnostic procedures used in medicine today, but suffer the greatest concerns about exposure; CT scans (of which over 70 million were performed in 2007 alone) expose the patient to 8,000 to 31,000 mR of radiation.

In addition to the amount of exposure, it's also important to consider the clinical value of the x-ray. If an x-ray is taken simply to "monitor" a scoliosis, and no clinical information regarding the patient's treatment can be derived from that x-ray, was it really worth it? The progression of a patient's scoliosis can be tracked in many different ways, such as MRI or surface topography. X-rays as a system for monitoring the progression of scoliosis seem anachronistic and outdated at best, downright irresponsible at worst. CLEAR doctors utilize a device called a Scoliometer to periodically evaluate the progression of a patient's scoliosis - only if it appears to be worsening as measured by the Scoliometer are additional x-rays taken.

The seven spot views taken by a CLEAR doctor are designed to provide the doctor with specific information about the biomechanical factors that are influencing the scoliosis in that specific patient's case. Every scoliosis is unique - it's impossible to design a "one-size-fits-all" exercise program that will work for every patient, or develop one "magic" chiropractic adjustment that corrects every patient's posture. Only through objective precision x-ray analysis can the exact biomechanical factors involved in a specific case of scoliosis be identified. Then, everything - the

exercises, the adjustments, the therapies - are designed around that patient's specific spinal configuration. The information in these x-rays gives us the knowledge we need to make effective clinical decisions that will give the patient the best possible results. Clearly, the clinical value of these seven x-rays is much greater than a single full spine which is taken only to monitor progression.

Today's x-ray machines are a thousand times safer than the devices used in the past, for which a documented increased risk is published. Recent studies conducted on post-1980 devices find only a minimal risk, compared to pre-1970's, which found a significant risk.^{80,81} The x-ray technologies in use in the 21st century are even safer. According to the most current scientific literature, the risks of living with scoliosis are significantly worse than the risks of radiation exposure.

9) Doing something is better than doing nothing.

The rationale behind observing a mild scoliosis is that, once a patient reaches the age of 18, the scoliosis will not progress. However, this is not supported by research. It has been known since 1969 that scoliosis can continue to progress after skeletal maturity.⁸² Collis & Ponseti followed 215 cases of scoliosis after maturity; and documented an average worsening of 15 degrees.⁸³ Weinstein *et al* showed that 68% of cases of scoliosis progress after skeletal maturity.⁸⁴ Korovessis *et al* reported a mean progression of 2.4 degrees per year over the course of 5 years in skeletally mature patients.⁸⁵ Danielson & Nachemson found that 36% of adolescents with scoliosis had progressed by more than 10° after 22 years.⁸⁶

Idiopathic scoliosis (IS) is often described as asymptomatic, but it is often associated with changes in pulmonary function – even patients with mild IS may present with reduced lung capacity.⁸⁻⁹⁴ Patients with no readily apparent pulmonary deficiencies may reveal decreased ventilatory function during maximal exercise.^{95,96} Cosmetic appearance and self-image can be affected.⁹⁷⁻¹⁰² Pain increases in incidence & severity with age in both adolescents & adults.¹⁰³⁻¹⁰⁷

10) The CLEAR system is cost-effective and has the best value.

According to an article published in 2000, it costs \$3,386.25 per year simply to monitor a child with a curve of 20 degrees or more – this is “observation only” – just doctor’s visits and x-rays, with no treatment provided.¹⁰⁸ To treat a child with a brace costs \$10,836.00 per year, and this

does not include the actual cost of the brace, which may range from \$10,000 to \$20,000. Scoliosis surgery, in 2000, cost \$120,000. It is significantly more expensive today, and multiple operations are sometimes required. In the event of hardware failure, the surgery to remove the instrumentation takes twice as long and costs twice as much. Should this become necessary, all correction achieved by the surgery is typically lost, although the damage to the spine, discs, muscles, tendons, and ligaments remains.

In contrast with bracing (which seeks only to stabilize the progression of the Cobb Angle), the goal of CLEAR treatment is to provide a measurable reduction of the Cobb Angle, and also to help you to breathe better, improve your posture & appearance, reduce your pain, and increase your body's ability to function.

While every CLEAR clinic is independent and responsible for setting their own fees, on the average, the cost of treatment is significantly less expensive than bracing, with a much better expected outcome. Many insurance companies may cover as much as 60 to 70 percent of the total cost of treatment, as well.

By choosing the CLEAR method, you are making a long-term investment in your health that may prevent the need for other, more costly treatments down the road.

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