

A REVIEW OF CBP® METHODS APPLIED TO REDUCE LATERAL THORACIC TRANSLATION (PSEUDO-SCOLIOSIS) POSTURES

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ABSTRACT

Objective: To characterize the evidence of CBP® technique methods in the reduction of lateral thoracic (pseudo-scoliosis) translation postures and its effect on pain, disability and quality of life.

Methods: The CBP NonProfit website as well as Pubmed and Index to Chiropractic literature were searched for clinical studies on the reduction of lateral thoracic translation postures by CBP methods.

Results: One clinical trial and 6 case reports were located. The trial showed an 8mm reduction after an average of 36 treatments over 11.5 weeks in 63 chronic low back pain patients with a 2-point drop in pain rating versus no spine or pain rating changes in 23 untreated controls. Six case reports showed an average reduction of 23mm after 33 treatments over 3.7 months with an average 4-point drop in pain rating. The cases also documented improvements in various functional, disability and quality of life measures.

Conclusion: There is a limited but evolving evidence-base supporting the unique mirror image® approach to reducing lateral thoracic translation postures by CBP technique methods that has impacts on pain, disability and quality of life. (*J Contemporary Chiropr* 2022;5:13-18)

Key Indexing Terms: Subluxation; Lateral Translation; Pseudo-Scoliosis; Review; Chiropractic BioPhysics; Lumbar Spine; Posture

INTRODUCTION

An important differentiation between scoliosis and pseudo-scoliosis was made in a 2006 publication by Harrison *et al.* (1) It was previously determined that a lateral translated thoracic posture displayed a vertebral coupling pattern of lower lumbar lateral flexion towards

the thoracic shift and upper lumbar/lower thoracic spine lateral flexion away from the shift back towards the vertical, essentially creating an S-shape. (2) In the 2006 study, (1) purposeful thoracic lateral translation movements were made by 15 volunteers and showed that with >50mm of translation, a 14-19° lumbar (L1-L5) or thoraco-lumbar (T12-L5) Cobb angle was created.

The key characteristic that differentiates true scoliosis and pseudo-scoliosis is that in lateral translation of the thorax over the pelvis (which creates the characteristic S-shaped spinal coupling pattern) involves no rotation of the involved vertebrae; therefore, the spinous processes remain centered. (1) Alternatively, true scoliosis has definitive vertebral body rotation as seen with the spinous processes off center. This is a critically important differentiation clinically, as scoliosis is difficult to treat (reduce) while lateral thoracic translation postures are relatively straightforward to treat. (3)

The first reporting of the clinical treatment on reducing a lateral thoracic translation posture was the non-randomized controlled trial in 2005. (3) Sixty-three chronic low back patients experienced an average 8mm reduction in lateral thoracic translation after 36 treatments over 11.5 weeks. There was also a 2.2-point reduction in pain rating. A comparison group of 23 volunteers not receiving treatment had a slight worsening of radiographic changes in posture and no change in pain rating after 37 weeks. (3)

Since the publication of this first trial, (3) there have been case studies documenting the reduction of this posture (e.g. Henshaw *et al.* (4)). The approach that CBP technique applies to reduce lateral translation postures is 1-sided or 'mirror image®' thoracic exercises, mirror image® spinal adjusting, and mirror image® traction (3,5-7), directed toward restoring verticality to the spine and posture.

This review characterizes the evidence of Chiropractic BioPhysics® (CBP®) technique methods (5-7) in the reduction of lateral thoracic (pseudo-scoliosis) translation postures and its effect on pain, disability and

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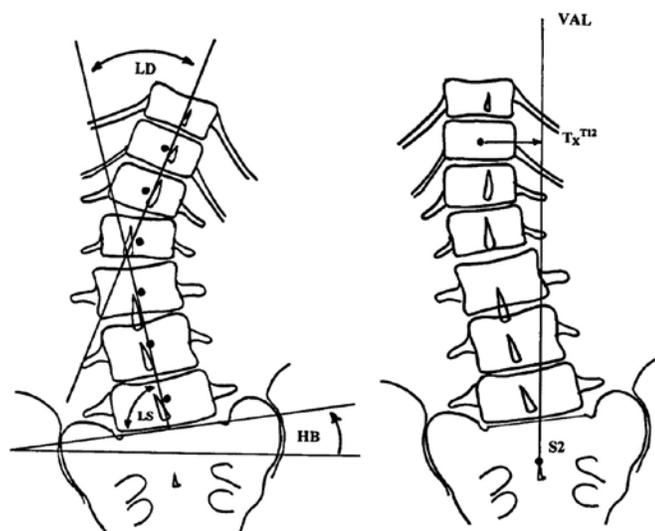


Figure 1. Left: Harrison's modified Risser-Ferguson method applied to AP lumbar radiographs. Best fit lines are created from the estimated centroids of each vertebra. The apex of the two lines represents the lumbo-dorsal (LD) angle. After drawing a line on the sacral base, a lumbo-sacral (LS) angle can be calculated by extending the lower line through the L5-S1 disc. Right: Lateral displacement is determined by the horizontal distance between the vertical axis line (VAL) drawn through the second sacral tubercle and the centroid of T12.

quality of life.

METHODS

A review of the CBP NonProfit citation listings (8) was performed for clinical papers reporting on the reduction of lateral thoracic translation postures via CBP technique methods. (5-7) Any clinical study type was included (trial, case report/series). A search on both Pubmed and the Index to Chiropractic Literature (ICL) was also performed using the keywords lateral thoracic/thorax translation or pseudo-scoliosis, and this was done to verify if any papers were missing from the CBP NonProfit website listing and/or if any papers were published since its last update (every fall). References were screened from any located articles. Searches were performed in dedicated chiropractic journals and conference proceedings. Experts were also contacted to further locate studies (i.e. authors of located cases).

CBP case reports were searched for this postural distortion and its correction even if not explicitly mentioned in the title of the manuscript. Cases were excluded if the treatment involved patients with scoliosis or if the treatment for the reduction of a lateral thoracic posture was treated exclusively by the prescription of a heel lift (i.e. Fortner *et al.* (9)).

Information extracted from any located studies included the age and sex of patient, chief complaint, number

of treatments, time duration of treatment, treatment specifics including traction set-up, traction duration, exercise protocol, adjusting protocol, as well as pre- and post-treatment magnitude of coronal offset (TxT) and corresponding lumbo-dorsal (LD) and lumbo-sacral (LS) angles (Figure 1).

RESULTS

Our search of the CBP NonProfit site located one non-randomized controlled trial (3) and 6 case reports described in 5 manuscripts (4,10-13) (Table 1). Searches in Pubmed revealed 4 hits and ICL 16 hits that either did not meet the inclusion criteria or were already located from the CBP NonProfit website. No other cases were located by searching journals, references or contacting case report authors.

As mentioned, the clinical trial reported an 8mm reduction in lateral thoracic translation posture after an average of 36 treatments over 11.5 weeks in 63 chronic low back pain patients. (3) There was a 2.2-point drop in pain rating (3/10 to 0.8/10) during the treatment while there was no change in spinal position or pain rating reported in 23 untreated control group volunteers with chronic low back pain. (3)

The 6 located cases (Table 1) showed an average lateral thoracic translation reduction of 23mm after 33 treatments over 3.7 months. (4,10-13) The corresponding reduction in LD and LS angles were 4.8° and 10.4°, respectively. The average age was 52 and the average reduction of pain was 3.8 points on a 10-point rating scale (5.4/10 to 1.6/10).

The reduction of lateral thoracic postures successfully relieved symptoms in patients with degenerative disc disease, (10) Parkinson's, (11) low back pain, (4) urinary incontinence, (12) and pain associated with post-surgical laminectomy. (13) Several cases also reported on improvements beyond pain relief including functional measures (e.g. range of motion), disability (e.g. Oswestry disability index), and quality of life (e.g. SF-36). There were no adverse events reported in any of the located studies.

DISCUSSION

This review has summarized the details from one non-randomized controlled trial and 6 case reports documenting the reduction of lateral thoracic translation postures in the treatment of low back spinal disorders.

The single located clinical trial showed an average reduction of 8mm over 36 treatments (3) while the case reports demonstrated an average 23mm reduction after 33 treatments. (4, 10-13) It is not surprising that the amount of correction shown in the individual cases

Table 1. Details of case reports showing reduction of lateral thorax translation postures in the treatment of various lumbar spine disorders.

Author	Year	Journal	Primary complaint	Age	No. m/f	Txt duration	Pre-post TxT	TxT reduction	Pre-post LD angle	LD angle reduction	Pre-post LS angle	LS angle reduction	Pre-post pain	Pain reduction	Other outcomes	f/u time	
Woodham (series)	2021	JCC	Degenerative disc disease	63	m	24	5.5m	+17.7mm/+4.8mm	12.5mm	N/R	N/R	N/R	N/R	7/2	5	Case 2: Less disability & SF-36 Case 5: Less disability & SF-36	no
				*60	m	42	4.5m	-40mm/-7mm	33mm	N/R	N/R	N/R	N/R	2/0	2		no
Anderson	2019	JPTS	Parkinson's	*59	m	38	4m	-12.8mm/-2.4mm	10.4mm	N/R	N/R	N/R	N/R	6/2	4	Improved gait, balance, hand tremors, back & knee pain, SF-36	1.75y
Henshaw	2018	JPTS	low back pain	29	f	36	3m	+20.3mm/-5.6mm	25.6mm	+1.7°/-1.5°	0.2°	-82°/+87.9°	10.1°	4/2	2	Reduced disability	no
Jaeger	2014	AVSR	Urinary incontinence	63	f	22	2m	+46.8mm/+6.4mm	40.4mm	+10.6°/+19.9°	-9.3°	-70.3°/-81.0°	10.7°	N/R	N/R	Resolution of incontinence, neck & low back pains	no
Oakley	2007	JVSR	Post-surgical laminectomy	35	m	36	3m	+16mm/-1mm	17mm	N/R	N/R	N/R	N/R	8/2	6	Reduced low back pain, leg pain & disability	.75y
Average				52	4m 2f	33	3.7m	25.6mm/4.5mm	23.2mm	6.1°/10.8°	4.8°	76.2°/84.5°	10.4°	5.4/1.6	3.8		

Note: *Application of heel lift; m/f= male/female; Txt= Treatment; LD= Lumbodorsal; LS= Lumbosacral; f/u= follow-up; N/R= Not reported; m= months; y= years.

averaged more than the trial as it is likely that a greater reduction in spine deformity would motivate a clinician to publish a positive clinical outcome (i.e. selection bias). However, since there is limited evidence in the manual therapies, (14) lower forms of evidence are acceptable toward informing clinical practice. (15,16)

Although there was a limited number of total case reports and only 1 trial, the data clearly shows that CBP methods can be used to reduce lateral translations of the thoracic cage. Also, from the data one can estimate a 0.22mm-0.7mm reduction per treatment. Therefore, a patient with a 10mm, 20mm or 30mm lateral thoracic translation posture would require 14-45, 29-91 or 43-136 treatments, respectively. Although there are wide ranges in treatment estimates, these represent the evidence-based practice estimates that currently exists. Further research into the CBP treatment of this postural subluxation will help refine treatment extrapolations.

As mentioned, we did not include any reports on reducing lateral thoracic translation postures by use of a heel lift exclusively or with the treatment of patients having scoliosis. Indeed, there are other causes for the torso to be offset from the midline and these can only be comprehensively assessed by radiography. (17) For this reason, we recommend the routine radiographic screening for those presenting with low back complaints as the diagnosis of a lateral translation posture, as differentiated from a true scoliosis or leg length inequality, is clinically important as it dictates a unique potential corrective treatment approach; that is, CBP methods.

Since the treatment approaches to low back disorders have questionable efficacy, (18) CBP methods offer a unique and spine-specific, radiographically-guided regimen that has an evolving evidence base, including for the treatment of lumbar and thoracolumbar pseudo-

scoliosis. This review adds to other recent reviews characterizing the scientific evidence in the clinical application of CBP methods to increase cervical lordosis, increase lumbar lordosis, reduce thoracic hyperkyphosis, and reduce lateral head translation postures. (19-22)

Since there is a lack of scientific evidence in chiropractic for many commonly practiced procedures, case reports become an important source for guiding information on clinical practice. (15, 16) Further, as discussed by the late David Russell, there is also a lack of clinical reports that document direct indicators of pre- and post-vertebral subluxation outcomes; (23) however, CBP methods including those procedures used to reduce lateral thoracic translation postures help satisfy this clinical evidence gap.

It is also important to mention that although there are contrasting views within the chiropractic profession regarding X-ray use, (24-33) this review adds to the accumulating evidence that CBP structural rehabilitation methods leads to reduced spinal misalignment, a type of subluxation. (34) In fact, small groups of individuals argue that there is no support for routine X-rays in diagnosing or aiding treatment choice (24, 26, 28,32); however, this is in opposition to evidence presented here and elsewhere, including many clinical trials supporting CBP methods. (19-22, 25,27,29-31,33)

There are some limitations to this review. First, there was a limited number of cases, and only 1 clinical trial. This is important as individual cases do not have control groups for comparison; however, there was a trial that did have a comparison group showing structural improvements coinciding with pain reduction. Second, there are limitations to the long-term knowledge of structural correction stability as only two cases included long-term follow-up, though both these cases reported the patient

had remained well at a 9-month (13) and a 1.75-year follow-up. (11) Third, the generalizability of the data is limited to mostly mid-aged persons as the trial was composed of 34 males and 29 females with an average age of 38 (\pm 18.4 years), (3) thus representing a wide range of adult ages of both sexes, however no children or adolescents were included in any report. Fourth, further research should help elucidate more precise treatment extrapolations.

CONCLUSION

There is limited but evolving clinical evidence showing that specific CBP protocols can reduce lateral thoracic translation postures. More research is needed to verify this data and to assess the long-term stability and its application to children and adolescents.

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