

**Deed E. Harrison, DC--**  
 Chair PCCRP Guidelines;  
 CBP Seminars, Inc.;  
 Vice President CBP NonProfit,  
 Inc.;  
 Editor- *American Journal of  
 Clinical Chiropractic*

## A New Cervical Lordotic Home Traction Device: The Denneroll—An Initial Case Series

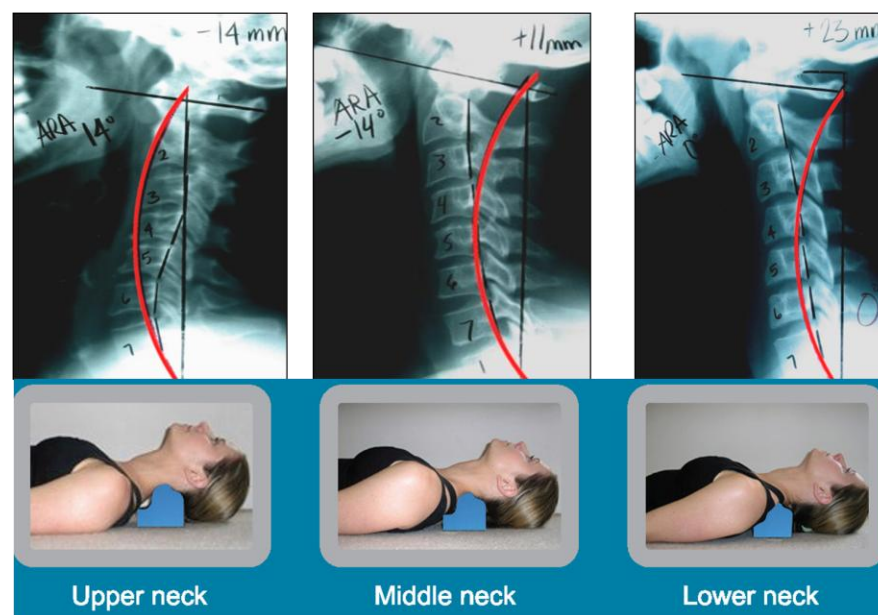
In a previous issue of the AJCC (2008), I presented the evidence for in office CBP<sup>®</sup> Technique structural rehabilitative procedures. According to the CBP publications, mirror image<sup>®</sup> exercises and traction procedures should be performed *in-office* at least 3-4 times per week for 9-12 weeks in order to obtain significant improvement in abnormal alignment of the spine and improvements in a patient's chronic disorder(s).<sup>1-5</sup>

However, the evidence based practice guideline/protocol of care for CBP technique, recommends home exercise and home traction for patients as a supplementary procedure to the in-office intervention program.<sup>4,5</sup> Also, home traction and exercise may be the only viable means of rehabilitation for patient's whom live many miles away from a given practice or for schedules that are simply not conducive to regular care.

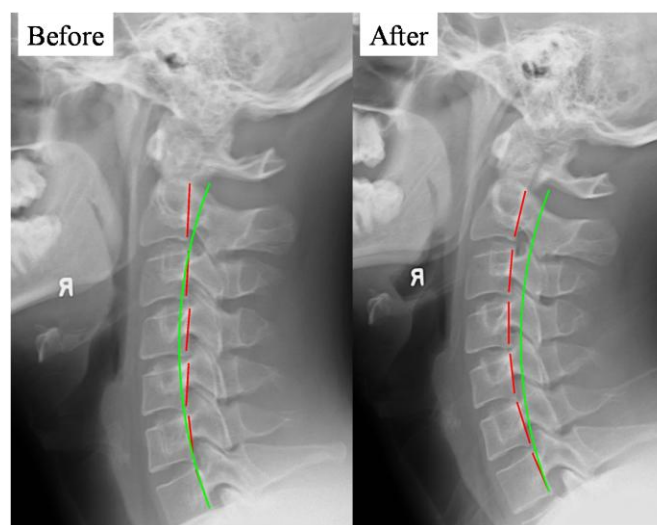
Problematically, to my knowledge, there exist no formal publications documenting the potential benefit/effect of different types of home traction procedures aimed at rehabilitation of the sagittal plane curvatures of the spine. Thus, the purpose of the present article is to present preliminary information on the immediate effect of one traction session using a new cervical orthotic device termed the Denneroll.

### Materials and Methods

The Denneroll (Designed by Adrian Dennewald, D. C. of Australia) is a new cervical sagittal plane orthotic device designed to passively stretch the cervical lordosis into a more lordotic position. See **Figure 1**. Its unique design allows it to support the upper thoracic



**Figure 1.** On the top row from left to right, 3 uniquely different subluxated lateral cervical curvatures are shown; the red line represents the ideal curvature of the neck after Harrison et al.<sup>1</sup> On the bottom row, three primary placements of the Denneroll cervical orthotic are shown. The Denneroll placement should match both the shape of the cervical curve and the amount of sagittal head translation correction that is desired.



**Figure 2.** Before and After Denneroll x-rays. With the subject supine, the Denneroll was placed in the lower neck as in Figure 1 for 11 minutes. The following up x-ray was taken after 5 minutes of recovery (no Denneroll). Good improvement in cervical lordosis was found after 1 session indicating likely benefit.

curvature while simultaneously create a 3-point bending extension load on the cervical spine.

Most commonly, the Denneroll has 3 primary positions that are used for aiding in the rehabilitation of the cervical lordosis:

- 1) The apex of the Denneroll orthotic is placed in the upper cervical region (C2-C4) region. This position allows extension bending of the upper cervical segments while cause slight anterior head translation. An upper neck setup and example x-ray subluxation are shown in

**Figure 1.** The red line represents the ideal curvature after Harrison et al.<sup>6</sup> while the black line shows the patients subluxated alignment.

- 2) The apex of the Denneroll orthotic is placed in the mid-cervical region (C4-C6) region. This position allows extension bending of the mid-upper cervical segments while creating a slight posterior head translation. See **Figure 1**.
- 3) The apex of the Denneroll orthotic is placed in the upper thoracic lower-cervical region (C6-T1) region. This position

Subject	ARA	ARA	Tz	Tz
	C2-C7 Pre	C2-C7 Post	C2-C7 Pre	C2-C7 Post
1.	19°	18°	-4mm	-2mm
2.	18°	29°	30mm	17.5mm
3.	20°	31°	14mm	1.6mm
4.	10°	23°	8mm	-3.5mm
5.	9°	44°	17mm	14mm
6.	31°	31°	44mm	38mm
7.	25°	31°	16mm	-4mm
8.	26°	26°	14mm	13mm
9.	27°	40°	10mm	12mm
<b>Means</b>	<b>20.5°</b>	<b>30.3°</b>	<b>17.4</b>	<b>10</b>
<b>Change</b>	<b>9.8°</b>		<b>7.4mm</b>	

allows extension bending of the majority of cervical segments while creating a significant posterior head translation. See **Figure 1**.

For a preliminary investigation, 11 Chiropractors volunteered for an initial neutral lateral cervical radiograph and completed a neck disability index. One out of the 11 lateral cervical came out with digital artifacts that could not be utilized while another had a normal cervical lordosis on the initial lateral x-ray. This left 9 subjects.

The 9 subjects were asked to lie supine on the floor over the Denneroll orthotic device for 10-13 minutes. Only 1 traction-session was used. The Denneroll location was selected by a trained practitioner.

Following the 10-13 minute traction session, the subjects were asked to relax comfortably for 3-5 minutes without stretching or bending the neck. Once the 3-5 minute interval elapsed, a second neutral lateral cervical radiograph was obtained.

### Results

The initial and follow-up lateral cervical radiographs were analyzed with the PostureRay x-ray digitization system. Only 2 of the many reported variables are shown in **Table 1**. The cervical lordosis measured using the posterior body margins of C2-C7 and the sagittal plane translation of C2-C7 are shown for each subject. From Table 1 it can be seen that a significant improvement in the cervical lordosis (**9.8°**) and reduction in sagittal plane head translation (**7.4mm**) was obtained.

## Discussion

It is significant that following only one 10-13 minute session on the Denneroll orthotic device, a significant improvement in both the cervical lordosis and anterior head translation. Obviously the results presented herein are preliminary and follow-up should be and will be performed on this device.

From Table 1, the astute reader will see that a couple of the subjects showed remarkable change in lordosis while a couple of subjects showed little only slight change. This type of situation is typical of any/all treatment devices and is due to many variables:

- The elasticity of the individual subject's tissues,
- The age of the subject,
- The state of degenerative joint disease-stiffness of the tissues,
- The shape of the thoracic curvature,
- Improper application during traction,
- Perhaps the device just won't work for some individuals, etc.

Most of the above variables can be overcome with continued effort on the patient's and the doctor's part. However, as with all interventions, there is no such thing as a one size fits all.

To me, the information presented herein, is preliminary data indicating the Denneroll orthotic may be a viable home traction device to supplement a CBP Chiropractors in office rehabilitative treatments. When the shape of the cervical curve indicates, the Denneroll could be used on off days from office treatments; and in difficult cases, it could be used daily once tolerance is developed.

Hopefully, the information presented will stimulate further research into the effects of home traction units. After all, the majority of us (myself included) recommend home products to our patients and *believe* in their effects; but wouldn't it be nice to know?

## References

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