## Research Reviews Involving Low Back Pain & Mechanical Traction

**Instructor:** Shawn Thistle, DC

### Section One: A clinical prediction rule for classifying patients with low back pain who demonstrate short-term improvement with mechanical traction

<table>
<thead>
<tr>
<th>Study Title:</th>
<th>A clinical prediction rule for classifying patients with low back pain who demonstrate short-term improvement with mechanical traction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors:</td>
<td>Cai C, Hao Pua, Y &amp; Chong Lim K</td>
</tr>
<tr>
<td>Author's Affiliations:</td>
<td>Rehabilitation Department, Alexandra Hospital, Singapore.</td>
</tr>
</tbody>
</table>

### Background Information:

Clinical prediction rules (CPR) are meant to assist clinical decision making by using specific historical factors or examination findings (and combinations thereof) to guide treatment decisions. The purpose of this review was to begin the process of developing a CPR for low back pain to help clinicians identify patients who may benefit from mechanical traction. The authors highlight the lifetime prevalence of low back pain (80%) and the associated high economic burden. However, more worrisome is the confusion surrounding the efficacy of numerous conservative therapies, including traction.

Previous literature has pointed towards a lack of evidence for traction in low back pain patients. However, there is strong concern regarding the quality of the studies, the lack of consistency between studies and the small sample sizes. In
addition, studies have not focused on pre-treatment fear-avoidance status, as pointed out by the current authors.

The purpose of the current study was to identify the correct subgroup of low back patients that are most likely to benefit from lumbar spine mechanical traction. This is done through the identification of variables which may have a significant relationship with patient outcome following a course of treatment. Therefore, if these variables are found during patient screening it may better inform prognosis as well as direct specific treatment.

Pertinent Results: If you are unfamiliar with the basic setup for early studies on clinical prediction rules, please refer first to the "Study Methods" section below before proceeding with the results of this study listed here:

- 13 potential prediction variables were identified. These included age, BMI, mechanism of onset, prior history of low back pain, presence of pain below the knee, job status, standing as an aggravating position, sitting as a relieving position, right SLR, neurological deficit and FABQ score.
- When comparing the responders to the non-responders, there was a statistical significant difference regarding age, BMI, having a traumatic onset and pain below the knee (both higher in non-responders), manual and desk work, standing as an aggravating position and sitting as a relieving position, the right SLR, neurological deficit (more non-responders) and a higher work subscale score on the FABQ (for non-responders).
- When the predicting factors were identified and entered into forward stepwise logistic regression, having an FABQ score of less than 21, not demonstrating neurological deficit, having an age older than 30 and no involvement with manual labour were identified as the four variables which composed the CPR.
- Of the 25 subjects who were deemed to be responders to mechanical traction, 9 had all four predictors, 19 had three or more, 24 had two or more and 25 had one or more.
- Patients without neurological deficit were 12.75 times more likely to respond to traction than their counterparts.
- Patients with a lower FABQ score (<21) were 3.07 times more likely to respond to traction than their counterparts.
- Patients that were not involved in manual labour were 3.66 times more likely to respond to traction than their counterparts.
- Patients over the age of 30 years were 4.18 times more likely to respond to traction than their counterparts.
- If 3 of 4 variables were present in the patient, the probability of successful traction was deemed to be 42.2%.
- If 4/4 variables were present in the patient, the probability of successful traction was deemed to be 69.2%.

**Clinical Application & Conclusions:**

While this study demonstrates several limitations, it offers and excellent preliminary attempt at identifying variables in low back pain patients most likely to respond to mechanical lumbar traction. Four variables emerged from the analysis in this study as helpful in predicting a positive response to traction:

1. being > 30 years of age
2. having no neurological deficit (this contradicts previous findings from other low back pain CPR research)
3. having a low FABQ score
4. non-involvement in manual labour

The authors caution however, that this CPR should not be used in a multi-modality treatment regime, based on the isolated intervention applied during this study. However, the authors also caution that this study should not be used to formulate treatment strategies longer than 3 sessions over a 9 day period.

Regardless, this study is useful in assisting clinicians to identify patients most suitable to traction and allow further prognostication surrounding low back pain patients presenting for conservative therapy. This is helpful when discussing goals and objectives from treatment as well as comparing treatment options. Though there is an obvious need for further research to confirm, this is an excellent first step.
Study Methods:
The current study was based on 129 patients that were referred from the orthopedic outpatient clinic over a 6 month time period with a chief complaint of pain and/or numbness in the lumbar spine, buttock and/or lower extremity. Patients were excluded based on current pregnancy, signs of spinal cord injury, history of spinal fracture, surgery or osteoporosis, or if it was determined they had non-spinal pain.

Outcome measures used and collected prior to treatment included the modified Oswestry Back Disability Questionnaire (OBDI), the Fear Avoidance Beliefs Questionnaire (FABQ), the numerical pain rating scale (NPRS), active lumbar flexion (recorded based on finger tip position at end range to mid-thigh, patellar, mid-shin and distal-shin) and the straight leg raise (SLR) determined at limitation caused by pain. In addition, standard physical examination findings such as neurological status and segmental mobility testing were conducted.

The intervention provided to patients was three motorized lumbar traction sessions over a 9 day period, using the Triton DTS Traction System from Chattanooga. Flexion sensitive patients were positioned supine with the hips and knees flexed to 90 degrees, and the legs supported on a stool while traction was applied. Patients that were not sensitive to flexion received traction in the supine position. Applied traction force was judged to be 30-40% of the patient's body weight, intermittently at 30 seconds on, with 10 seconds off for 15 minutes.

Following the trial of therapy, patients were provided with the OBDI once more. Those patients with an OBDI score improving 50% or more were deemed to be responders to treatment. Data belonging to responders was then compared to non-responders in order to determine possible predictive variables.

Of the 129 recruited patients, all were included. Twenty five patients (19.4%) were found to have a 50% improvement following 3 sessions of mechanical traction, and termed the responders.

Study Strengths/Weaknesses:
This study has a few major limitations which are important to address. First is the sample size. The authors are comparing a group of only 25 responders to that of 104 non-responders. A larger sample size yielding a greater number of responders...
would provide greater strength to these conclusions. In addition, only one therapy was utilized without a control group. Therefore, it is hard to determine if the 25 responders would have responded equally to another form of therapy or if their improvement was due to natural history over the course of the 9 days. In addition, the sample used was quite heterogeneous for gender (83.7% male) and duration of pain (ranging from 1-1,040 weeks).

Furthermore, the use of an OBDI improvement of 50% or more was not explained adequately. One can wonder how the results of this study would change if an alternate improvement score were chosen. For example, the OBDI has been demonstrated to show minimum clinically important difference at a change in score ranging from 6 to 15 points (12-30%). Despite the authors explaining this choice based on the 'mechanical characteristics of traction' being utilized as an adjunct treatment to other interventions, a more descript rationale is required given their methodology.

Additional References:


Section Two: Traction for low back pain with or without sciatica: An updated systematic review within the framework of the Cochrane Collaboration

<table>
<thead>
<tr>
<th>Study Title:</th>
<th>Traction for low back pain with or without sciatica: An updated systematic review within the framework of the Cochrane Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors:</td>
<td>Clarke J et al.</td>
</tr>
<tr>
<td>Summary:</td>
<td>A common treatment for low back pain and sciatica is traction. For many years traction has been employed as a single treatment, or in combination with other modalities for lumbar spine complaints, most</td>
</tr>
</tbody>
</table>
commonly involving disc pathology with radiculopathy.

As many of us in practice know, there are many companies who are advertising and selling very elaborate traction machines with equally elaborate claims of clinical success. One just needs to check the office mail to find a new flyer or brochure for such a product. The purpose of this systematic review (within the framework of the Cochrane Collaboration) was to assess the efficacy of traction for low back pain with or without sciatica/radiculopathy, compared to reference treatments, placebo/sham traction, or no treatment.

The most frequently used traction techniques (all included in this review) are:

1. mechanical or motorized traction (via machine)
2. manual traction (via therapist)
3. auto-traction (patient controlled by grasping/pulling on bars attached to a traction table)

Most traction devices utilize a harness around the rib cage and another around the iliac crest area. The force exerted can be intermittent or continuous, but only in motorized units can it be standardized. Factors contributing to the actual force transmitted through the spine include muscular counterforces, skin stretch and subcutaneous tissue girth, abdominal pressure, and the frictional interface between table and patient.

The following have been proposed as mechanisms of action for traction (or spinal elongation):

- decreasing lordosis and increasing intervertebral space
- inhibition of nociceptive impulses
- improved mobility
- decreased mechanical stress
- reduced muscle spasm or spinal nerve compression
- release of luxation of a disc or capsule from the Z-joints
- release of adhesion from the Z-joints

It is worth noting here that none of the above-listed mechanisms have been satisfactorily supported by empirical data.

There is also controversy in the literature regarding the most effective amount of load required for effective traction. Case reports exist citing
adverse reactions to traction forces in excess of 50% body weight while others question the utility of forces less than 20% body weight (even referring to it as "placebo traction").

The objective of this review was to update a previous systematic review that was done up to 1992. Randomized controlled trials including men or women (over 18 yoa) treated for non-specific LBP with some type of traction were included. Other treatments could be provided, as long as traction was the main treatment component. LBP patients in these trials included acute, subacute, and chronic cases. Outcome measures investigated were: pain (measured with VAS or NRS), a global measure (overall improvement etc.), back-pain specific functional status (ex. Roland Morris or Oswestry), and return to work.

In total, 24 studies involving 2177 patients were included in the review. All 24 studies included at least some patients with sciatica.

Relevant observations and recommendations from this review include:

- for mixed groups of patients with LBP (with and without sciatica), traction is no more effective than comparison treatments (including placebo and sham traction)
- for patients with sciatica, there is contradictory evidence regarding traction compared to sham, placebo, or no treatment
- for patients with sciatica, there is contradictory evidence regarding different types of traction (i.e. which type of traction is superior - mechanical, manual, or auto)
- there is limited evidence that there is no difference between light and normal force traction for patients with sciatica
- several new trials have been published since the last review (3 of them being of high quality), but the results have not changed substantially

Conclusions & Practical Application: The main conclusion of this review is that traction as a single treatment for LBP with or without sciatica is no more effective than placebo, sham, no treatment, or other treatments.

It should be noted that the lack of strong, consistent evidence regarding the use of traction results from the lack of well designed, high quality studies, heterogeneity of study populations, and lack of statistical power in existing studies. The reviewers found NO high
quality studies supporting possible positive effects of ANY of the types of traction included in this review. They also state that some of the earlier published positive evidence came from low quality studies that investigated auto-traction.

From a clinical perspective, the reviewers state that no studies were found that investigated traction as part of a pragmatic multidisciplinary approach to LBP - perhaps illuminating a useful avenue for future studies. As I have said before, it often doesn't surprise me that individual treatments (ex. SMT, massage, etc.) are not supported as single treatments for LBP. Most practicing clinicians utilize a number of treatment modalities—a remaining disconnect between clinical practice and scientific research.

At this time, traction cannot be recommended as a single treatment for LBP with or without sciatica.

Section Three: Comparison of 3 physical therapy modalities for acute pain in lumbar disc herniation measured by clinical evaluation and magnetic resonance imaging

<table>
<thead>
<tr>
<th>Study Title:</th>
<th>Comparison of 3 physical therapy modalities for acute pain in lumbar disc herniation measured by clinical evaluation and magnetic resonance imaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors:</td>
<td>Unlu Z et al.</td>
</tr>
<tr>
<td><strong>Authors' Affiliations:</strong></td>
<td>Department of Physical Medicine and Rehabilitation, Celal Bayar University, Manisa, Turkey.</td>
</tr>
<tr>
<td>Summary:</td>
<td>Lumbar disc herniation (LDH) is a common cause of lower back pain that can frequently be managed by non-operative care, including physical therapy modalities. However, there is little evidence in support of the use of physical therapy modalities for LDH and the Agency for Health Care Policy and Research guidelines even discourage practitioners from using them. The evidence is conflicting as to the effectiveness of lumbar traction for LDH, which has been taken to mean in some guidelines that traction is ineffective for this condition. As for ultrasound and laser for the treatment of LDH, no data is available. In spite of the</td>
</tr>
</tbody>
</table>
evidence, however, practitioners use traction and ultrasound extensively in the treatment of LDH. The authors suggested this discrepancy is probably because of the practitioners' positive experiences using these modalities.

The examination of choice for diagnosing LDH is magnetic resonance imaging (MRI), yet the authors could find no studies that evaluated the efficacy of physical therapy modalities in patients with LDH using MRI. Accordingly, the purpose of this study was to compare the effect of several non-surgical treatment methods for LDH: traction, ultrasound, and low-power laser (LPL). Several commonly used subjective indices were used as outcome measures, as well as MRI, which was used to compare the size of the LDH pre- and post-treatment.

Sixty sequentially presenting patients with confirmed LDH were recruited from a university clinic and were randomized into 3 groups of 20 subjects each. Patients were treated 5 days per week for 3 weeks, totaling 15 sessions. Interventions were as follows:

1. **Lumbar traction (intermittent motorized):** applied for 15 minutes per session with force applied for 30 seconds, then rest for 10 seconds. The force was set to patient tolerance, ranging from 35% to 50% of body weight. Patients were positioned supine with their knee and hips flexed to 90 degrees.
2. **Ultrasound:** was performed at an intensity of 1.5 W/cm² in continuous mode, applied over the posterior lumbar region bilaterally for 8 minutes.
3. **Low-power laser:** was applied over both sides of the disc spaces where the herniation was detected on MRI for 4 minutes at each point. A continuous form of energy was delivered and the power output was 50 mV and a wavelength of 830 nm. The diameter of the laser beam was 1 mm. The dose at each point was 1 J.

**Outcome measures:**

- **Physical examination:** lumbar ROM, tenderness on palpation of paravertebral muscles, straight-leg raise test (SLRT), femoral stretch test in patients with femoral neuralgia, neurological (reflexes and strength)
- **Subjective measures:** visual analog scale (VAS), with 0
representing no pain to 100 unbearable pain, Roland Disability Questionnaire (RDQ), Modified Oswestry Disability Questionnaire (MODQ)

- MRI

**Pertinent results of this study:**

- Examination findings were significantly improved from baseline values for each outcome measure, except the Schober test.
- There were few significant differences on examination findings between the 3 groups at the follow-up evaluations.
- Pain and disability scores were significantly improved between baseline and follow-up evaluations, though there were no significant differences between the 3 treatment groups.
- LDH size on MRI was reduced significantly subsequent to treatment in each group, but again, there were no differences between the groups.
- There was no correlation between physical examination findings, pain, and disability scores when compared to change in LDH size.

**Conclusions & Practical Application:**

This study was thought to be the first to compare the effectiveness of traction, laser, and ultrasound in the treatment of acute LDHs. The study generally pointed to no significant differences between the groups, although each group showed significant improvements in examination findings, LDH size, as well as subjective findings. The authors were therefore able to conclude that traction, laser, and ultrasound treatments were equally effective in the treatment of acute herniated lumbar disc syndrome.

The authors argued that previous studies that have been critical of the use of physical therapy modalities in the treatment of LDH were poorly designed. That being stated, several studies have investigated traction as a therapy for patients with sciatica, finding it to be better than a corset, bed rest, isometric abdominal exercise, heat, hot-pack massage, and mobilization. Laser and ultrasound have not been investigated with regard to this condition.

In spite of the evidence maligning its use, mechanical traction is preferred by many physical therapists for the treatment of acute sciatica. The same is true for ultrasound and TENS(1). The results
of the current study support the use of traction, laser, and ultrasound in the treatment of LDH, which may influence the recommendations of future guidelines.

**Comment:** The major limitation of this study is the lack of a control group assigned to receive a placebo form of traction, ultrasound or laser. Another comparison that could have increased confidence in the study's findings would be the inclusion of another group that received no treatment (waiting list). Studies that do not include these kinds of comparisons are subject to numerous biases (e.g., natural progression of the condition, regression to the mean, placebo effect, etc.). Consequently, these non-specific components of treatment may have been the real reason patients improved in this study rather than the interventions that were used.

**Additional References:**


---

**Section Four: Is there a subgroup of patients with low back pain likely to benefit from mechanical traction? Results of a randomized clinical trial and subgrouping analysis**

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Is there a subgroup of patients with low back pain likely to benefit from mechanical traction? Results of a randomized clinical trial and subgrouping analysis</th>
</tr>
</thead>
</table>
| Authors:    | Fritz JM et al.  
**Authors' Affiliations:** Intermountain Healthcare and University of Utah, Salt Lake City, Utah; Therapy Partners Inc., Burnsville, Minnesota. |
| Summary:    | Recent evidence-based practice guidelines1, a narrative literature review2, and even a Cochrane Collaboration Review3 have indicated that mechanical traction for treatment of low back pain (LBP) with or without sciatica cannot be endorsed. This lack of |
support is based upon clinical trials that compared traction to a sham treatment, placebo, or other treatments using heterogenous samples of LBP patients. Recent evidence has suggested that matching LBP patients to interventions based on a Clinical Prediction Rule (or CPR) which incorporates historical and physical examination factors can improve outcomes, and hence improve the power of clinical research. Most research conducted on traction has not utilized such an approach.

Expert opinion, and research thus far on the LBP CPR has identified the following defining factors as those most likely to identify patients who will benefit from traction:

- presence of sciatica
- signs of nerve root compression
- a positive straight leg raise test
- failure to demonstrate centralization on clinical examination

The purpose of this study was to determine whether a subgroup of patients could be identified who would respond favorably to mechanical traction. 64 subjects (average age 41.1) with pain and/or numbness extending distal to the buttock, signs of nerve root compression, and Oswestry score = 30% were randomized into one of two treatment groups:

1. **Extension Oriented Treatment Approach (EOTA) (n=33)** - received exercises and mobilization to promote lumbar extension and centralization of symptoms (9 sessions in 6 weeks plus home exercise).

2. **Traction plus EOTA (n=31)** - same intervention as EOTA group plus mechanical traction using an adjustable table for the first 2 weeks (3-dimensional ActiveTrac Table, The Saunders Group Inc.) with the patient prone. Traction was performed for 12 minutes (including 1 minute ramp-up and down) using 40-60% of the patient's body weight.

Outcomes were assessed at baseline, and at 2 and 6 weeks, and included: pain intensity on an 11-point Numeric Pain Rating Scale (NPRS), Oswestry Disability Index (ODI), Fear-Avoidance Beliefs Questionnaire (FABQ), and a 15-point Global Rating of Change (GROC) Questionnaire.
### Pertinent Results of this Study Include:

- The traction group displayed greater improvements in disability (mean adjusted ODI difference of 7.2 points) and fear-avoidance (mean adjusted FABQ difference 2.6 points) at 2 weeks (remember, traction was only utilized for the first 2 weeks).
- There were no between-group differences at 6 weeks (using intent-to-treat analysis).
- After 6 weeks - 82.6% of traction/EOTA patients reported improvement versus 73.1% in the EOTA group.
- Rates of success based on 50% ODI improvement were almost identical in the two groups - 60.9% and 61.5% respectively.
- Two baseline variables were associated with greater improvements with traction: peripheralization with extension movement, and a positive crossed-SLR.

### Conclusions & Practical Application:

This study suggests that a subgroup of LBP patients does exist that is more likely to benefit from mechanical traction, which supports previous research on the LBP CPR, and expert opinion. Greater reductions in disability and fear-avoidance were noted in the traction group at 2 week follow-up, but not at 6 weeks. This suggests that the addition of traction has no lasting benefit. However, the fact that this benefit disappeared at 6 weeks may suggest that the 2 week traction intervention needs to be longer to maximize efficacy.

This study should be considered preliminary due to the short follow-up period and small sample size - further research is required.

### Additional References:


Section Five: Outcomes after a prone lumbar traction protocol for patients with activity-limiting low back pain: A prospective case series study

<table>
<thead>
<tr>
<th>Study Title:</th>
<th>Outcomes after a prone lumbar traction protocol for patients with activity-limiting low back pain: A prospective case series study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors:</td>
<td>Beatie PF et al.</td>
</tr>
<tr>
<td><strong>Authors’ Affiliations:</strong></td>
<td>Departments of Exercise Science and Physical Therapy - University of South Carolina, Virginia Commonwealth University.</td>
</tr>
<tr>
<td>Publication Information:</td>
<td>Archives of Physical Medicine and Rehabilitation 2008; 89: 269-274.</td>
</tr>
<tr>
<td>Summary:</td>
<td>Lumbar traction is one of the oldest known treatments for low back pain (LBP). Recent evidence-based practice guidelines(^1), a narrative literature review(^2), and even a Cochrane Collaboration Review(^3) have indicated that mechanical traction for treatment of low back pain (LBP) with or without sciatica cannot be endorsed. This lack of support is based upon clinical trials that compared traction to a sham treatment, placebo, or other treatments using heterogenous samples of LBP patients. The VAX-D (Vertebral Axial Decompression System) is a newly developed mechanical traction device that is being heavily marketed to chiropractors and other manual therapists. The VAX-D’s manufacturer claims that this table will reduce the patient’s reflex spinal musculature contractions, allowing distraction of the vertebrae and reduction in intradiscal pressure, resulting in symptom reduction. The VAX-D utilizes a pelvic harness while the patient stabilizes him/herself using a hand grip. This prospective case series investigated short and long-term treatment outcomes after administration of a prone lumbar traction protocol using the VAX-D in a group of patients with LBP.</td>
</tr>
</tbody>
</table>
296 subjects participated in this study, all meeting the following inclusion criteria:

- between the ages of 18-60 with specified medical coverage (not further specified)
- reported activity-limiting LBP with or without lower extremity pain, with an average intensity of at least 4 on an 11-point Numeric Pain Rating Scale (NPRS) during the month prior to admission
- score of at least 6/24 on the Roland-Morris Disability Questionnaire (RMDQ)
- imaging evidence of a degenerative or herniated lumbar disc at a level corresponding to symptoms
- reported a lack of favourable outcomes with at least 2 previous non-operative interventions (spinal manipulation, TENS, etc.)

Subjects were excluded if they:

- were currently involved in a worker’s compensation claim or legal action
- had undergone previous treatment with prone traction
- had activity-limiting pain in regions other than the low back and legs
- had previous lumbar/abdominal surgery
- were currently pregnant, or unable to maintain a prone position
- were taking any anti-coagulants, corticosteroids, or opiate-based pain medication

Outcome measures included the 11-pt NPRS and the RMDQ - each were administered at baseline, 8 weeks (completion of treatment), and 1 and 3 months post-discharge.

It is worth noting that on intake, all subjects watched a videotape produced by the manufacturer of the VAX-D (see limitations listed below).

Traction treatments on the VAX-D were 30 minutes in length,
including 15 cycles of traction/relaxation (60 seconds each) with a working pressure of between 8.9-9.8 Kg/cm². Treatments were administered on an outpatient basis 5 times per week for 4 weeks, then once per week for 4 weeks, for a total 8 week treatment period.

**Pertinent Results of this Study Include:**

- the majority of subjects (79%) reported being symptomatic for at least 6 months
- the majority of subjects (84.5%) received 16-24 treatments during the 8 week treatment period
- of the subjects who completed the protocol, 81.4% provided follow-up data at 180 days (3 months) post-discharge
- highest pain intensity was significantly lower at 3 months post-discharge (p < 0.01)
- the average decrease in pain intensity ranged from -1.6 to -2.8 on the NPRS
- RMDQ scores improved significantly at all follow-up times (p < 0.01), including between discharge and 3 month follow-up (p < 0.01)
- effect sizes based on the RMDQ scores ranges from 2-2.3 at the three follow-up measures

**Conclusions & Practical Application:**

This case series provides preliminary data regarding treatment outcomes after treatment with the VAX-D system. Patients in this case series generally reported improved pain and disability scores after 16-24 treatments administered over an 8 week period. The authors note however, that there were large variations in the magnitude and meaningfulness of the degree of changes in these measures. They also correctly state that: "Causal relationships between these outcomes and the intervention should not be made until further study performed using randomized comparison groups."

Several limitations of this project should be kept in mind when interpreting the results:

- showing subjects a video produced by the manufacturer
may have biased them toward successful treatment outcomes

- the inclusion criterion requiring imaging findings of disc pathology to "confirm" the level of involvement conflicts with current evidence that questions the relevance of such findings in terms of how they correlate to clinical symptoms, or are affected by treatment - the authors mention this in the discussion
- follow-up data was not available for roughly 20% of patients, and no mention was made of how this was dealt with statistically
- as a case series, this study had no control group, and hence no causal relationship can be implied between the traction applied with the VAX-D and the observed outcomes
- the patient sample had relatively chronic pain which had been unsuccessfully treated with other interventions - thus representing a group with an unfavourable prognosis in general
- further, the authors mention that they did not sub-classify subjects based on the presence or absence of spinal nerve compression - such classification has been previously shown to predict those more likely to respond to this type of intervention

Practice Implications:

1. Unfortunately, results of studies such as this are often overstated by device manufacturers, and practitioners who own these devices. The prudent clinician should be critical of such claims based on only one study, and consider these results in combination with previously published reviews that look at the literature as a whole (see references below).
2. The VAX-D system is quite expensive to purchase - at this time there is no literature comparing this device to those that are less expensive.
3. Further research is required to determine whether the VAX-D is superior to other mechanical traction devices that utilize different subject positioning (supine versus prone),
harnessing techniques, and have different treatment surfaces.

Additional References: