Study: Flexion-Distraction Effective for Chronic LBP

Superior to Exercise in Terms of Pain Relief, Patient Satisfaction

By Michael Devitt

According to the most recent edition of the National Board of Chiropractic Examiners’ Job Analysis of Chiropractic, 56.5 percent of chiropractors utilize flexion-distraction technique in practice. However, despite the technique’s relative popularity, few studies have compared flexion-distraction with other chiropractic techniques used to relieve the most common condition for which patients visit chiropractors: back pain.

Even fewer studies have been published comparing flexion-distraction to non-chiropractic interventions such as rest, hot and cold therapies, or exercise.

A study published in a recent issue of the European Spine Journal compares the effectiveness of flexion-distraction to a strengthening and conditioning program in patients with chronic low back pain (LBP). The study revealed that flexion-distraction provides significantly greater pain relief and overall patient satisfaction compared to the exercise program, particularly in patients with LBP and accompanying radiculopathy.

In the study, researchers recruited 235 adults, all of whom complained of LBP of at least three months’ duration, from chiropractic clinics and orthopedic clinics in Illinois. After completing a screening questionnaire and a brief physical examination, patients were randomized to receive flexion-distraction or to participate in a form of active exercise.

The Flexion-Distraction Group

Flexion-distraction consisted of two components: a series of traction procedures using flexion range of motion directed at a specific joint level; and a series of mobilization procedures using a combination of ranges of motion, again directed at a specific joint level. Most patients in this group moved from the traction component to mobilization within four weeks of care.
A single flexion-distraction treatment lasted between three minutes and six minutes, with the type of procedure used dependent on the presence of radiculopathy. For patients with radiculopathy, the traction procedure in flexion was used. Each repetition was held for four seconds, with a maximum of five repetitions allowed per set. Three sets of repetitions were given at each visit, with the number of repetitions determined by symptom severity.

For patients without radiculopathy, the mobilization procedures were used. Repetitions in all motions were held for two seconds each, except for circumduction, in which a single repetition lasted four seconds. The number of repetitions depended on the severity of the patient’s symptoms, with a maximum of 15 repetitions for each set.

For each study patient, all clinically relevant vertebral levels from the lower thoracic spine through L5/S1 were treated at each visit, with determination of the relevant levels made through palpation of the lower spine, along with evaluation of other signs and symptoms. In addition, patients in the flexion-distraction group received treatments such as ultrasound and cryotherapy.

**The Active Exercise Group**

Patients assigned to this group participated in a program designed to strengthen the muscles surrounding the spine and increase flexibility. The program consisted of four phases of increasingly difficult exercises. In phase one, depending on each patient’s symptoms, subjects performed flexion or extension exercises, flexibility exercises, and received additional treatments such as cryotherapy and ultrasound, as well as an individualized cardiovascular exercise program. In the second phase, upper- and lower-extremity weight training was added. Lumbar extension training was added in phase three.

In phase four, a second cardiovascular exercise and an increase in weight training were added. A typical active exercise session lasted between 30 minutes and 45 minutes.

In both treatment groups, participants were seen between two and four times per week, at the discretion of the treatment provider, for four weeks. To determine the effectiveness of treatment, all study participants completed a visual analogue scale (to measure changes in pain), the Roland Morris questionnaire (to measure disability) and the SF-36 Health Survey to measure overall health status. Measurements were taken at baseline and again at the conclusion of the intervention period. In addition, all participants completed a satisfaction survey within 48 hours of their final treatment.
Study Findings and Subgroup Analysis

According to the researchers, "Significant differences were observed in the pre to post measures for all primary outcomes at four weeks, regardless of treatment group." When pretreatment scores were taken into account, analysis of the visual analogue scales "indicated a statistically significant difference in the VAS between the two treatment groups, favoring flexion-distraction." In patients who received flexion-distraction, VAS scores changed an average of 22.66 percent, compared to only 15.46 percent for exercise patients. No such differences were indicated based on the Roland Morris and SF-36 scores.

When the results were analyzed based on whether the patient suffered from radiculopathy, the scientists observed "a trend toward greater improvement in perceived pain for those with radiculopathy in the flexion-distraction group." In addition, patients who suffered from continually chronic LBP and symptoms that were moderate to severe in intensity appeared to derive the most benefit from flexion-distraction. According to the authors, "Descriptive results suggested that moderate to severely affected continual chronic pain patients may have benefited most from flexion-distraction. When data from these moderate and severe subgroups were combined, a 27.22% change in VAS was observed in the flexion-distraction group compared with only a 14.36% change in the active trunk exercise protocol group." Patients with moderate to severe symptoms and recurrent (not continual) low back pain appeared to receive the most benefit from active exercise.

With regard to patient satisfaction, a greater percentage of patients in the flexion-distraction group (79.6 percent) felt that the care they received helped them "quite a bit" or "very much" compared to active exercise patients (65.1 percent). In addition, flexion-distraction patients were more willing to return to the type of care they received (85.3 percent) and to recommend it to friends or family members (87.4 percent) than patients in the active exercise group (77.1 percent and 77.1 percent, respectively).

Observations and Conclusion

"The differences in treatment results according to subgroup analyses make biological sense," the researchers observed when discussing why both flexion-distraction and active exercise appeared to be effective in relieving low back pain. They explained that each intervention attempted to achieve the same results using different methods. Flexion-distraction, they wrote, "was intended to provide motion and forces directed at specific intervertebral levels," while active exercise attempted "to concentrate more on strengthening the muscles surrounding the spine and increasing flexibility." As such, "a greater decrease in VAS among
patients with radiculopathy should be expected for the FD group, where changes in disc pressure may be most important."

The authors speculated that the results in the radiculopathy and recurrent/chronic subgroups may help to explain the contradictory results of previously published studies that have compared chiropractic techniques with other methods in the treatment of LBP. They also suggested that further studies be conducted to help define the nature of subgroups of people with LBP. As they noted in their conclusion:

"In accordance with many studies of chronic low back pain, patients perceived significantly less pain after intervention, regardless of group allocation. Subjects randomly allocated to FD had significantly greater relief from perceived pain, as defined by VAS scores, than those in ATEP. According to the Roland Morris, both groups responded in terms of function and there was no difference between groups on this measure. Subgroup analysis indicated that subjects categorized with recurrent pain and moderate to severe symptoms improved most with ATEP. This may help explain contrasting outcomes among previous trials of chronic low back pain treatments."

References
