Mechanically Assisted Manual Techniques: Distraction Procedures

Thomas F. Bergmann
P. Thomas Davis
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Thomas F. Bergmann, DC, FICC
Professor, Chiropractic Methods Department
Faculty Clinician
Northwestern College of Chiropractic
Bloomington, Minnesota

P. Thomas Davis, MUP, DC, DACBOH
Associate Professor of Research
Northwestern College of Chiropractic
Bloomington, Minnesota

Photographs by Arne Krogsveen
Illustrations by Ken Shipper

with 348 illustrations and photographs
Radiographic images taken at various times during the unloading process show a considerable increase in intervertebral spaces. The results of the study led researchers to determine that 10 minutes of this traction appears to be the optimum time for maximal lumbar lengthening. The study also reports that nearly all subjects demonstrated a dramatic reduction in lumbar curvature.\(^9\)

The results expected from use of the LTX 3000 include increasing the intradiscal area by providing traction on the lumbar spine and unloading the spine, thereby reducing low back pain. Sitting in the position required by the LTX 3000 allows the patient to perform certain rehabilitation exercises to stretch and strengthen the low back. This device also allows the clinician to perform mobilizing manipulation.

THE GRAVITY LUMBAR TRACTION FRAME

The Gravity Lumbar Traction Frame was used prominently and written about by Charles Burton, M.D. This device was used frequently at the Sister Kenny Institute in Minneapolis, Minnesota, since the mid 1970s, when the program of low back treatment known as the Gravity Lumbar Reduction Therapy Program (GLRTP) was introduced. As noted by Burton,\(^10\) the protocol for use of the device was to gradually load the lower body in traction by increasing the tilt of the frame over several days. This allowed the patient to acclimate to the traction and allowed the force to be applied gradually. (Fig. 7-13.)

This device is used on both chronic and acute patients with low back pain and is coupled with a course of exercises and toughening, or hardening, activities. This treatment has become generally an outpatient activity, and the Low Back Club was formed for ambulatory patients at the Sister Kenny Institute. The objective is to return the injured worker to work as soon as possible, before compensation issues arise.

INVERSION: THE BACK-A-TRACTION AND GRAVITY GUIDING SYSTEM

The Back-A-Traction is a Swedish-designed form of inversion therapy performed on a table. Most inversion devices are related to the early gravity boots or Gravity Guiding System that were used in the past but have since fallen from favor because they allow little control by the patient. The Gravity Guiding System required the use of special foot and ankle supports that snapped into place. Each support had a hook on the front that allowed a temporary connection to an overhead bar, which had to be installed by the patient. The inverted mounting of the bar by the patient proved difficult or impossible for most patients. (Fig. 7-14)
The Back-A-Traction inversion device incorporates high quality and heavy-duty construction. The patient is fastened into the foot clamps, which then allow control of the inversion process through stages. When the table tilts backward and the patient is positioned, the first stop is at full parallel to the ground. A release of this position must be initiated by the patient, and the second and third positions are accessed. The greatest inversion of this device is approximately 15 degrees below horizontal, and stops are automatic at each subsequent position toward the maximum inversion. Release from the position is initiated with the handle that is held constantly by the patient. (Fig. 7-15.)
Fig. 7-8 Patient repositioning feet for exercise in LTX 3000 traction device.
- Patient is seated comfortably and correctly in the LTX 3000, with the sling tension partially released, so that more of the body weight is borne by the torso pads and the lower back is in traction.
- Exercises can be performed while the patient is in the traction position; proper positioning of the feet can facilitate the exercise process.
- This illustration demonstrates the way in which the pelvis can be rocked forward and backward (extension-flexion).
- The patient’s arms can rest on the padded rests adjacent to the torso. (Courtesy Spinal Design, Minneapolis, Minn.)

Fig. 7-9 Patient repositioning feet in full knee flexion under LTX 3000.
- Patient is seated correctly in the LTX 3000, with the knees in full flexion under the device, in preparation for pelvic tilting and rotation of the pelvis right and left. (Courtesy Spinal Design, Minneapolis, Minn.)
Fig. 7-10 Patient rotating pelvis in LTX 3000.
- Patient with feet positioned so that knees are near right angles and rotated to the left.
- This is another exercise position for the device. Other exercises can be performed on the LTX 3000 by acute, chronic, or rehabilitating patients. *(Courtesy Spinal Designs, Minneapolis, Minn.)*

Fig. 7-11 Clinician positioned for posterior adjustment of patient on LTX 3000.
- Patient is positioned on the LTX 3000, with the arms at rest and traction on the lower back resulting from the seated position.
- One leg is fully extended; the other leg is flexed, with the knee less than 90 degrees; and the lower back relaxed.
- Clinician is positioned behind the patient, kneeling with a stable squatting stance to create sufficient leverage on the patient.
- With this position, the right ilium is flexed slightly. This facilitates the clinician performing a mobilizing repeated thrust into the right ilium, creating movement in the right sacroiliac joint. *(Courtesy Spinal Designs, Minneapolis, Minn.)*
Fig. 7-12 Close-up of clinician performing posterior adjustment on LTX 3000.
- Patient is positioned on the LTX 3000, with traction on the lower back.
- Clinician is positioned kneeling behind the patient, mobilizing the ilium.
- This is being performed while the patient is in seated traction, with the spine unloaded.

(Courtesy Spinal Designs, Minneapolis, Minn.)

Fig. 7-13 See legend opposite page.
Fig. 7-14 The Gravity Guiding System
- The gravity boots are fitted to the patient’s ankles and strapped on.
- Patient is assisted or climbs into an inverted position, clipping the boots onto the hanging rod.
- Patient then hangs suspended for a period ranging from 2 minutes to 30 minutes. (From Martin RM. The Gravity Guiding System: Turning the Aging Process Upside Down. Pasadena, Calif: Gravity Guidance, Inc; 1975.)
Once the desired inversion is reached, the patient may initiate a mild exercise by flexing and straightening the knees, allowing the bed on which the patient is lying to slide back and forth a few inches. This process is controlled completely by the patient and can be used to enhance the condition of the back. Earlier versions of this device produced full inversion, and some patients incurred problems. In some hypertensive individuals, full inversion has the potential for increasing intraocular pressure, leading to possible damaging effects on blood vessels in the eyes.\textsuperscript{11-13} The inversion produced by the modern table is much less than with earlier similar products, therefore decreasing the possibility of damaging effects.\textsuperscript{14}

The concept of inversion therapy is to provide for unloading of the lower back, reducing pressure and discomfort. These devices can be used at home and are considered to be adjunctive therapy for the patient.

Certain contraindications for use of this therapy must be considered, and some precautions must be taken during the course of the therapy protocol. Patients must be selected carefully, with consideration given to the patient’s cardiovascular health (possible hypertension) and the condition of the spine (osteoarthritis condition).

CERVICAL TRACTION DEVICES:
THE PRONEX AND THE PNEU-TRAC

Two of the cervical traction devices available use a pneumatic traction mechanism to create the desired traction. Glacier Cross makes the Pronex, which is used with the patient in a supine position on a bed or other flat surface. The traction is provided by an expandable section over the cervical spine that is inflated by compressing a bulb similar to that on a sphygmomanometer. A headband binds the head into a contoured section designed to pre-