Passive Lumbar Extension Exercise Using a Pneumatic Pressure Device

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When passive lumbar extension is indicated in the treatment of low back pain and sciatica, it may be provided through exercises performed by the patient or by manual mobilization of the spine by the therapist. On occasion, however, a patient is not well suited to either approach.

The patient with acute lumbar pain and sciatica may find position changes, the strain imposed by self-exercise, or the localized pressure of mobilization procedures quite painful. The patient with chronic lumbar pain may also be experiencing neck and upper back pain. The passive extension exercises advocated by McKenzie and others require that the patient lie prone and use the arms to “press up” the upper body, creating lumbar extension. This creates a certain amount of muscular strain and soreness in the shoulder, arms, and upper back and may be intolerable for such a patient. In these and other similar situations, we have had good results using a Jobst Extremity Pump to provide passive lumbar extension.

The patient lies supine with a deflated standard arm sleeve positioned beneath the low back. Pillows may be used beneath the patient’s knees if the flat supine position is uncomfortable. The Extremity Pump is connected and the sleeve is inflated. Cycle time and pressure may be varied to suit patient comfort and treatment goals. We have found that a cycle time of 20 seconds on and 10 seconds off is well tolerated.

If the goal of the treatment is the use of passive extension to reduce the effects of a suspected prolapsed intervertebral disk, the pressure should be set at a level that causes movement but that does not hit the end of the available extension range (similar to a Maitland Grade II mobilization). We have found that pressures from 20 to 35 mmHg meet this need.

If the goal of the treatment is to increase the available range of lumbar extension, the pressure should be set at a level that causes movement and produces a noticeable but tolerable stretch sensation (similar to a Maitland Grade III mobilization). We have found that pressures from 30 to 50 mmHg meet this need.

Treatment time will vary from 5 to 30 minutes, based on the patient’s problems and tolerance. Patients are progressed to exercise programs and other treatment modalities as appropriate.

We have found this procedure to be well received by patients and effective in reducing lumbar pain and sciatica when lumbar extension treatment is indicated.

REFERENCE

Spool Roll for Positioning the Child Prone

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Physical therapy for the neuromuscularly involved child frequently includes prone positioning as a part...
of developmental stimulation. Pillows, rolls, and wedges are usually used to achieve this position; however, when some children are placed prone, they immediately assume a total extension pattern with the arms hyperextended and internall rotated (Fig. 1). Preventing this pattern is difficult using the traditional devices. However, the high sides of spools on which rope or chain is commercially packaged are ideal for preventing this pattern and keeping the child's arms forward. The spools are made of metal, plastic, or heavy cardboard and come in a variety of sizes. They can be obtained, usually free, from stores that sell hardware, boating supplies, or mountain climbing equipment.

To adapt a spool, cut a bottom edge from each disk to the level of the center roll. Place the flat edges on the floor, pad the center roll with a towel or small blanket, and position the child prone over the center roll with the upper extremities forward (Fig. 2). A small pillow may be put under the child's chest for added trunk support.

Isometric Exercise Apparatus
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This isometric exercise apparatus was designed to allow a patient to perform isometric hip exercises following bilateral pelvic osteotomies. Isometric exercises were provided to maintain muscle tone in the patient's lower extremities as he was on prolonged bed rest. Prior to the use of this device it was necessary for a physical therapist to assist the patient in performing isometric hip exercises; with this apparatus the patient is able to perform unassisted isometric hip abduction and adduction exercises through a full range of motion and to carry out a bedside exercise program independently (Fig. 1).

MATERIALS

1. adjustable (12-17 in) section of lofstrand crutch consisting of two pieces: 1 in* diameter and 1-1/8 in diameter (Fig. 2)
2. 2 pieces of wood—8 in by 5 in by 1 in
3. 2 blocks of wood—2 in by 4 in by 10 in

* 1 in = 2.54 cm.