

1 **Clinical Practice Guideline:** **Non-Motorized Flexion Distraction Technique**

2

3 **Date of Implementation:** **July 13, 2006**

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5 **Product:** **Specialty**

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8 **GUIDELINES**

9 American Specialty Health – Specialty (ASH) considers Non-Motorized Flexion
10 Distraction Technique medically necessary as a chiropractic spinal manipulative treatment
11 (CPT Codes 98940-42). For more information about spinal manipulation see the following
12 clinical practice guidelines: *Spinal Manipulative Therapy for Non-Musculoskeletal*
13 *Conditions and Related Disorders (CPG 119 – S)*, *Spinal Manipulative Therapy for*
14 *Treatment of Children (CPG 120 – S)*, and *Spinal Manipulative Therapy (SMT) for*
15 *Musculoskeletal and Related Disorders (CPG 285 – S)*.

16

17 **DESCRIPTION/BACKGROUND**

18 Non-motorized flexion distraction technique (FDT) is performed by using specially
19 designed tables that hold the upper trunk stationary while the lower trunk is passively
20 moved through various planes. The lower trunk and spine are simultaneously flexed while
21 a distraction force is applied along the spine.

22

23 This technique is designed primarily to treat discogenic back pain. The combined forces
24 applied by FDT are thought to separate individual vertebral segments. By doing so, the end
25 plates of adjacent vertebra are separated, and the intra-discal pressure is reduced. In the
26 case of a herniated disc, this reduced intra-discal pressure may “suck back” the herniated
27 nucleus pulposus, or otherwise cause a beneficial change in its position. Proponents of this
28 technique also believe the traction effects on the longitudinal ligaments may push the
29 herniated nuclear material back into place. FDT is also believed to benefit other paraspinal
30 structures. This includes restoring normal intervertebral motion, reducing muscle
31 hypertonicity and the sensitivity of annular pain fibers, improving circulation around the
32 intervertebral foramen, and freeing-up of adhesions (Cooperstein & Gleberzon, 2004).

33

34 The origins of this technique can be traced to Dr. John McManis, DO, who first described
35 the principles of distraction therapy in the early 1900s. The “McManis Table” has been in
36 continuous use since that period for the application of FDT. Currently, FDT is most closely
37 associated with Dr. James Cox, DC, who conducted early research on the clinical outcomes
38 of the Cox® Flexion Distraction Technic (<http://www.coxtechnic.com/>). Dr. Cox and
39 others have developed their own versions of the McManis table. The Cox® Table by Haven
40 Innovation, for example, uses FDT to treat various musculoskeletal and related disorders
41 of the lumbar as well as the cervical spine.

1 EVIDENCE REVIEW

2 There have been numerous earlier clinical case series and case studies on the clinical effects
 3 of FDT (Cox, 1985; Cox, 1998; Cox & Aspegren, 1987; Cox & Cox, 2005; Cox, Feller, &
 4 Cox-Cid, 1996; Cox, Hazen, & Mungovan, 1993; Cox & Shreiner, 1984). An unblinded
 5 study compared FDT to side-posture adjusting in the treatment of patients with low back
 6 pain and radiculopathy. There were no differences between the two groups and both groups
 7 showed clinically important benefits. There have been a number of prospective clinical
 8 studies published by Dr. Cox and others on patients with low back pain with and without
 9 leg pain, spondylolisthesis, and chronic pelvic pain. All of these studies have shown
 10 positive results, but the lack of a control group and other methodological deficiencies do
 11 not permit definitive conclusions to be drawn.

12
 13 Schliesser (2003) set out to objectively quantify data from the Visual Analogue Scale
 14 (VAS) to support the clinical judgment exercised for the use of flexion distraction
 15 manipulation to treat cervical radiculopathy. A retrospective analysis of the files of 39
 16 patients from a private chiropractic clinic that met diagnostic criteria for inclusion. All
 17 patients were diagnosed with cervical radiculopathy and treated by a single practitioner
 18 with flexion distraction manipulation and some form of adjunctive physical medicine
 19 modality. The VAS was used to objectively quantify pain. Of the 39 files reviewed, 22
 20 contained an initial and posttreatment VAS score and were therefore utilized in this study.
 21 This study revealed a statistically significant reduction in pain as quantified by visual
 22 analogue scores. The mean number of treatments required was 13.2 +/- 8.2, with a range
 23 of 6 to 37. Only 3 persons required more treatments than the mean plus 1 standard
 24 deviation. The results of this study show promise for chiropractic and manual therapy
 25 techniques such as flexion distraction, as well as demonstrating that other, larger research
 26 studies must be performed for cervical radiculopathy.

27
 28 Cambron et al. (2006) compared pain and disability during the year after active care based
 29 on treatment group allocation (Flexion Distraction versus Exercise Program). This was the
 30 first RCT using flexion distraction. Two hundred and thirty-five (235) subjects who were
 31 previously randomized to either chiropractic care (flexion distraction) or physical therapy
 32 (exercise program) within a clinical trial. Subjects were followed for 1 year via mailed
 33 questionnaires. Results indicated that subjects had a decrease in pain and disability after
 34 both interventions; however, those receiving flexion distraction had significantly lower
 35 pain scores than subjects who received physical therapy (exercise program). Authors
 36 concluded that in this first trial on flexion distraction care, flexion distraction was found to
 37 be more effective in reducing pain for 1 year when compared to a form of physical therapy.

38
 39 Gudavalli (2013) measured intradiscal pressure (IDP) changes in the lower cervical spine
 40 during a manual cervical distraction (MCD) procedure. Incisions were made anteriorly,
 41 and pressure transducers were inserted into each nucleus at lower cervical discs. Four
 42 skilled Chiropractors (DCs) performed MCD procedure on nine specimens in prone

1 position with contacts at C5 or at C6 vertebrae with the headpiece in different positions.
2 IDP changes, traction forces, and manually applied posterior-to-anterior forces were
3 analyzed using descriptive statistics. IDP decreases were observed during MCD procedure
4 at all lower cervical levels C4-C5, C5-C6, and C6-C7. The mean IDP decreases were as
5 high as 168.7 KPa. Mean traction forces were as high as 119.2 N. Posterior-to-anterior
6 forces applied during manual traction were as high as 82.6 N. Intra-clinician reliability for
7 IDP decrease was high for all four DCs. While two DCs had high intra-clinician reliability
8 for applied traction force, the other two DCs demonstrated only moderate reliability. IDP
9 decreases were greatest during moving flexion and traction. They were progressively less
10 pronounced with neutral traction, fixed flexion, and traction, and generalized traction.

11
12 Cambron et al. (2014) also did a pilot randomized controlled trial of flexion distraction
13 dosage for chiropractic treatment of lumbar spinal stenosis with the purpose of assessing
14 the feasibility of recruiting older adults with lumbar spinal stenosis into a clinical trial that
15 used different dosages of flexion-distraction manipulation. Three groups consisted of
16 chiropractic flexion-distraction manipulation applied at different dosages (8, 12, or 18
17 treatments). The fourth group was given 8 treatments of placebo care. Feasibility measures
18 included recruitment goals, adherence to various treatment schedules, credibility of the
19 placebo treatment, and rates of adverse events. The primary outcome measure was the
20 Swiss Spinal Stenosis Questionnaire, a validated self-report of LSS symptom severity and
21 physical function. The recruitment and adherence goals of the study were met with a total
22 of 60 subjects randomized ($n = 15$ per group) and most subjects attending at least 75% of
23 their scheduled visits. No adverse events were reported by any of the subjects in the trial.
24 However, the placebo treatment did not appear to be credible; given most subjects correctly
25 guessed that they were receiving a placebo treatment. Authors discovered that larger
26 sample sizes are needed for future studies to be meaningful. According to authors, this pilot
27 study showed that it is feasible to recruit patients with LSS and that most subjects will
28 adhere to a 6-week treatment schedule.

29
30 Choi et al. (2014) examined the effects of manual therapy using joint mobilization and
31 flexion-distraction techniques on chronic low back pain and disc heights. This study was
32 conducted with 31 chronic low back pain patients who were divided into a manual therapy
33 group (MTG; $n=16$) and a spinal decompression therapy group (SDTG; $n=15$). The MTG
34 was treated using joint mobilization techniques and flexion-distraction techniques, and the
35 SDTG was treated using spinal decompression therapeutic apparatuses. Conservative
36 physical therapy was used in both groups, and the therapy was implemented three times
37 per week for 6 weeks. The visual analog scale (VAS) was used to measure patient's low
38 back pain scores, and a picture archiving and communication system was used to measure
39 disc height by comparing and analyzing the images. In comparisons of the VAS within
40 each of the two groups, both the MTG and the SDTG showed significant decreases. In
41 comparisons of disc height within each of the two groups, the MTG showed statistically
42 significant increases. Authors concluded that manual therapy using joint mobilization

1 techniques and flexion-distraction techniques is considered an effective intervention for
2 addressing low back pain and disc heights in patients with chronic low back pain.

3
4 Choi et al. (2015) examined the effects of flexion-distraction manipulation therapy on pain
5 and disability in patients with lumbar spinal stenosis. Thirty patients with lumbar spinal
6 stenosis were divided into two groups: a conservative treatment group ($n=15$) and a flexion-
7 distraction manipulation group ($n=15$). The conservative treatment group received
8 conservative physical therapy, and the flexion-distraction group received both conservative
9 physical therapy and flexion-distraction manipulation therapy. Both groups received
10 treatment 3 times a week for 6 weeks. The Visual Analog Scale was used to measure pain
11 intensity, and the Oswestry Disability Index was used to evaluate the level of disability
12 caused by the pain. The Visual Analog Scale scores for pain were significantly decreased
13 in both groups. According to the Oswestry Disability Index, the level of disability was
14 significantly decreased in both groups, but the decrease was more significant in the flexion-
15 distraction group. Authors concluded that flexion-distraction manipulation appears to be
16 an effective intervention for pain and disability among patients with lumbar spinal stenosis.

17
18 Oh et al. (2018) examined the effects of flexion-distraction and drop techniques on
19 disorders and Ferguson's angle in female patients with lumbar intervertebral disc
20 herniation. Thirty female patients with lumbar intervertebral disc herniation were divided
21 into an experimental group ($n=15$) treated with flexion-distraction and drop techniques and
22 a control group ($n=15$) treated with spinal decompression therapy. Both groups were
23 treated three times a week over an eight-week period. Results demonstrated that both
24 groups showed statistically significant decreases in disorders and in Ferguson's angle.
25 Authors concluded that flexion-distraction and drop techniques may be an effective
26 intervention to improve disorders and Ferguson's angle in female patients with lumbar
27 intervertebral disc herniation. Oh et al. (2019) performed a similar study looking at the
28 effects of flexion-distraction technique and drop techniques on straight leg raising angle
29 and intervertebral disc height of patients with lumbar intervertebral disc herniation. Thirty
30 female patients between the ages of 20 to 60 years of age were assigned to the experimental
31 group ($n=15$) treated with flexion-distraction and drop techniques or to the control group
32 ($n=15$) treated with spinal decompression therapy. Both groups were treated three times a
33 week for 8 weeks. Both groups had a significant increase in straight leg raising angle and
34 intervertebral disc height. The authors concluded that flexion-distraction technique and the
35 drop technique may be effective interventions for straight leg raising angle and
36 intervertebral disc height in patients with intervertebral disc herniations.

37
38 Carrasco-Martínez et al. (2019) sought to determine the short-term effects of a modified
39 Flexion-Distraction (FD) technique in comparison with a high-velocity low-back spinal
40 manipulation (HVLA-SM) protocol on patients suffering from chronic low-back pain
41 (CLBP) in a randomized controlled trial. The sample was composed of 150 patients
42 suffering from CLBP, who were randomly assigned to either a FD ($n = 75$) or a HVLA-

1 SM ($n = 75$) group. The variables used to study pain were the scores of the Visual Analogue
2 Scale (VAS) and the Pressure Pain Threshold (PPT) on trigger points (TrPs) of the
3 quadratus lumborum. In addition, the Oswestry Disability Index (ODI) was used to
4 measure disability, and Schober's test and the Finger Floor Distance test (FFDT) to
5 measure changes in low-back spine motion. Results demonstrated statistically significantly
6 greater improvements in the FD group for all outcome variables. Authors concluded that
7 for patients suffering from CLBP, greater improvements in pain and function were
8 observed in the group receiving the modified FD treatment than in the HVLA-SM group.

9
10 A systematic review of FDT evaluated scientific literature on both the physiologic and
11 clinical effects of the technique (Gay, Bronfort, & Evans, 2005). Thirty articles were
12 identified. Three were uncontrolled or pilot studies, three were basic science studies, and
13 six were case series. Most were case reports. Lumbar distraction manipulation is a
14 nonthrust mechanically assisted manual medicine technique with characteristics of
15 manipulation, mobilization, and traction. It is used for a variety of lumbar conditions and
16 chronic pelvic pain. The primary rationale for its use is on the basis of the biomechanical
17 effects of axial spinal distraction. Little data are available describing the in vivo effect of
18 distraction when used in combination with flexion or other motions. Authors conclude that
19 despite widespread use, the efficacy of distraction manipulation is not well established.
20 Further research is needed to establish the efficacy and safety of distraction manipulation
21 and to explore biomechanical, neurological, and biochemical events that may be altered by
22 this treatment. The evidence on the effects of FDT on disc pressure and mechanics could
23 be described as promising, but inconclusive (BenEliyahu, 1996; Beira & Peers, 1998; Onel,
24 Tuzlaci, Sari, & Demir, 1989). Studies on cadavers have consistently shown an increase in
25 disc height resulting from axial distraction. MRI studies on live subjects have shown that
26 during flexion, the nuclear margins tend to move posteriorly, which is not what the theory
27 of FDT supposes. In vivo studies of intra-discal pressure changes have produced
28 inconsistent findings.

29 30 **PRACTITIONER SCOPE AND TRAINING**

31 Practitioners should practice only in the areas in which they are competent based on their
32 education training and experience. Levels of education, experience, and proficiency may
33 vary among individual practitioners. It is ethically and legally incumbent on a practitioner
34 to determine where they have the knowledge and skills necessary to perform such services.

35
36 It is best practice for the practitioner to appropriately render services to a patient only if
37 they are trained, equally skilled, and adequately competent to deliver a service compared
38 to others trained to perform the same procedure. If the service would be most competently
39 delivered by another health care practitioner who has more skill and expert training, it
40 would be best practice to refer the patient to the more expert practitioner.

1 Best practice can be defined as a clinical, scientific, or professional technique, method, or
 2 process that is typically evidence-based and consensus driven and is recognized by a
 3 majority of professionals in a particular field as more effective at delivering a particular
 4 outcome than any other practice (Joint Commission International Accreditation Standards
 5 for Hospitals, 2020).

6
 7 Depending on the practitioner’s scope of practice, training, and experience, a member’s
 8 condition and/or symptoms during examination or the course of treatment may indicate the
 9 need for referral to another practitioner or even emergency care. In such cases it is prudent
 10 for the practitioner to refer the member for appropriate co-management (e.g., to their
 11 primary care physician) or if immediate emergency care is warranted, to contact 911 as
 12 appropriate. See the *Managing Medical Emergencies (CPG 159 – S)* clinical practice
 13 guideline for information.

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