Cleland JA, Fritz JM, et al. Comparison of the effectiveness of three manual physical therapy techniques in a subgroup of patients with low back pain who satisfy a clinical prediction rule: a randomized clinical trial. Spine 2009;34(25):2720-2729.

Design: Randomized clinical trial

Population/sample size/setting:

- 112 patients (57 men, 55 women, mean age 40) treated for low back pain at several military and university settings in the United States
- Eligibility was determined by the presence of at least 4 of 5 criteria derived from a clinical prediction rule to identify patients likely to benefit from manipulation
    - At least 16 days of duration of current episode of LBP
    - No symptoms distal to the knee
    - Fear-avoidance subscale score no greater than 19 points
    - Segmental mobility testing with at least one hypomobile segment in the lumbar spine
    - Hip internal ROM with at least 35 degrees in at least one hip
- Exclusion criteria were red flags such as tumor, osteoporosis, prolonged steroid use, metabolic disease), signs of nerve root compression, lower extremity muscle weakness, diminished reflexes, or diminished sensation to pinprick in any lower extremity dermatome

Main outcome measures:

- All patients received a 4 week intervention program with 5 sessions of treatment
- All patients received one of three manual therapy interventions: supine thrust manipulation (n=37), side-lying thrust manipulation (n=38), and nonthrust manipulation (n=37)
    - Both thrust techniques were high-velocity low amplitude manipulations which attempted to produce a cavitation (a “pop’); the nonthrust group had an oscillatory manipulation without cavitation as a criterion for the technique
    - These three groups were maintained only for the first 2 treatment sessions, delivered in the first week after randomization
    - The final three sessions were the same in all patients, and consisted of a standardized exercise regimen once weekly for three weeks
- The follow-up assessments were done by an observer unaware of treatment received; patients were instructed not to discuss their treatment assignment
    - The first assessment was done after 1 week (after the first two manipulation sessions), at 4 weeks (end of the exercise phase of the treatment program), and at 6 months
- Outcome measures were the Oswestry, the Numerical Pain Rating Scale, and a questionnaire regarding side effects since the first treatment session
- 98 of the 112 patients completed the 6 month assessment; completion rates did not differ between groups
- Pain and Oswestry scores did not differ between the two thrust groups at any of the follow-up times

- However, both thrust groups had better Oswestry scores than the nonthrust group at all follow-up times
    - At six months, the thrust groups had about a 6 point final Oswestry superiority over the thrust groups
    - At six months, the pain scores (scale 0-10) were compared; the final pain scores were not significantly different between the thrust and nonthrust groups
- Success, defined by at least a 50% reduction in the Oswestry score, was more frequent in the thrust groups than in the nonthrust group
    - After 6 months, the success rates for the supine thrust, side-lying thrust, and nonthrust groups were 91.9%, 89.5%, and 67.6%
- 28 patients (25%) reported at least one side effect, most commonly, an aggravation of symptoms followed by stiffness; these were equally distributed in the three groups and resolved over 48 hours after onset

Authors' conclusions:

- The clinical prediction rule used for patient selection into the study is likely to identify patients who will benefit from thrust manipulation of the low back
- A study limitation was that the authors were not able to track the number of patients screened for eligibility in each of the settings; previous research estimates that about 25-40% of patients with LBP referred to physical therapy will meet the criteria of thee clinical prediction rule

Comments:

- Although the performance of the clinical prediction rule appears to have been of primary importance in the study, it can also be interpreted as a comparison of thrust and nonthrust manipulation in selected patients with LBP
- The conduct and analysis of the study were well planned and executed, with a low risk of bias and a statistical model well-suited to the analysis of repeated measures data; co-interventions were the same in all three groups
- The emphasis on the Oswestry scores over pain scores is also well-conceived

Assessment: High quality study providing good evidence that two sessions thrust manipulation of the thoracolumbar spine leads to better low back function at six months than oscillatory non-thrust manipulation in patients with subacute low back pain having segmental hypomobility, no symptoms distal to the knee, low fear-avoidance scores, and preservation of at least 35 degrees of internal rotation in at least one hip