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Effectiveness of Four Conservative Treatments for Subacute Low Back Pain

A Randomized Clinical Trial

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Study Design. A randomized, assessor-blinded clinical trial was conducted.

Objective. To investigate the relative effectiveness of three manual treatments and back school for patients with subacute low back pain.

Summary of Background Data. Literature comparing the relative effectiveness of specific therapies for low back pain is limited.

Methods. Among the 5925 inquiries, 206 patients met the specific admission criteria, and 200 patients randomly received one of four treatments for 3 weeks: back school, joint manipulation, myofascial therapy, and combined joint manipulation and myofascial therapy. These patients received assessments at baseline, after 3 weeks of therapy, and 6 months after the completion of therapy. The primary outcomes were evaluated using visual analog pain scales and Roland–Morris activity scales.

Results. All four groups showed significant improvement in pain and activity scores after 3 weeks of care, but did not show further significant improvement at the 6-month follow-up assessment. No statistically significant between-group differences were found either at the 3-week or 6-month reassessments.

Conclusions. For subacute low back pain, combined joint manipulation and myofascial therapy was as effective as joint manipulation or myofascial therapy alone. Additionally, back school was as effective as three manual treatments. [Key words: back school, chiropractic, effectiveness, joint manipulation, low back pain, myofascial pain syndrome, randomized clinical trial] **Spine 2002;27: 1142–1148**

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Numerous conservative therapies have been reported for low back pain (LBP).[15,28] Whereas some studies have compared either a pragmatic approach[3,18] or combined therapies,[2,8] others have focused on the efficacy of specific therapies as compared with a placebo or sham.[7,17] Only a few studies have compared the relative efficacy of individual specific therapeutic procedures.[4,19,27] At this writing, no randomized clinical trial has been conducted to evaluate the effectiveness of myofascial therapy for LBP, which has been promoted by Travell and Simons[26] for more than four decades.

In this study, the authors aimed to address the relative effectiveness of joint manipulation, myofascial therapy, combined joint manipulation and myofascial therapy, and back school for the management of subacute low back pain. Two research questions were addressed:

1. Was combined joint manipulation and myofascial therapy more effective than joint manipulation or myofascial therapy alone?
2. Were specific manual procedures more effective than back school?

Methods

Subjects and Recruitment. The study was conducted at the Outpatient Physical Therapy Clinic at the University of California Irvine Medical Center (UCIMC) located in Orange, California, and the Center for Research and Spinal Care at the Los Angeles College of Chiropractic (LACC) located in Anaheim, California. The recruitment methods included public announcements and advertisements in major local newspapers and local radio stations as well as distribution of study brochures. The inclusion criteria required an age of 18 years of age or older, LBP duration of more than 3 weeks and less than 6 months for the current episode or a pain-free period of at least 2 months in the preceding 8 months for recurrent LBP, agreement for randomization, and consent for treatment.

The exclusion criteria specified pregnancy; serious medical problems (*e.g.*, advanced cancer, heart failure); definable neurologic abnormalities in the lower extremities (*e.g.*, peripheral neuropathy, multiple sclerosis, hemiplegia, myelopathy); spine disorders with bony lesions (*e.g.*, osteoporosis, fracture, unstable spondylolisthesis, multiple myeloma), with radiographs were taken as clinically indicated; significant mental disorders (*e.g.*, psychosis, mania, major depression), as indicated by telephone inquiry and clinical interview; obesity (a Davenport body mass index exceeding 33 kg per meter of height[1]); leg pain with positive nerve root tension test results; litigation; automobile injuries; work injuries; inappropriate illness behavior (pos-

itive Wadell's sign);[29] anticoagulant therapy; history of lumbar surgery; and use of the study treatments for the current episode.

Randomization. After acceptance into the study, patients were randomized into one of four treatment groups using a computer program designed to balance allocation of patients according to age, gender, duration of LBP, and treatment preference for physical therapy or chiropractic. Randomization was performed separately at each site.

Outcome Assessment, Blinding, and Follow-up Evaluation. The outcome measures included the following:

Visual analog scale (VAS) of pain[24] during the past week

Roland–Morris activity scale[20,21] specific to LBP[6] and MOS 36-Item Short-Form Health Survey[9,10,22,30] for general health status

Short form of the Minnesota Multiphasic Personality Inventory: the Mini-mult (71 items)[14]

Confidence score[19] and satisfaction score modified from Coulter et al[5].

Palpation for active trigger points in iliocostalis lumborum at L1, quadratus lumborum (superficial, myofascial trigger point [MTrP] 2), gluteus maximus (MTrP 2), gluteus medius (MTrP 2), gluteus minimus (anterior), and piriformis (MTrP 1). An active trigger point was defined as a tender point with characteristic of referring pain away from the site of digital compression. A previous study[12] found that although the interexaminer reliability was not clinically acceptable among the nonexpert trained physician examiners for palpation of taut bands and local twitch response, it was clinically reliable for palpation of referred pain in the aforementioned six muscles.

Palpation for tenderness over the spinous processes and the facets of the lumbar spine, as well as the sacroiliac regions medial to the posterosuperior iliac spines[11].

Blinded independent examiners (physiatry residents at UCIMC and chiropractic residents at LACC) performed these assessments 1 to 2 days before the treatment started, 1 to 2 days after 3 weeks of care, and 6 months after the care. Five monthly telephone follow-up evaluations were conducted regarding work or school days lost, current pain level (0–10), use of health care services, and the Roland–Morris activity score. For this study, the primary efficacy variables were VAS pain and Roland–Morris activity scores.

Clinical Interventions. All the study patients were provided with written general guidelines. They were told to avoid any unusual activities over the 3-week treatment period (*e.g.*, new aerobic exercise classes, new sports activities), lifting heavy objects when possible, working in a stooping position, lifting objects with knees straight, prolonged sitting or standing without changing position, any other treatments, and use of external applications to the low back for 3 weeks (*e.g.*, lumbar support, electrical stimulator, medicated plasters, herbal patches). The patients also were discouraged from taking medication for pain. If necessary, only over-the-counter medications such as acetaminophen were used. The protocols of the interventions were standardized as described in the following sections.

Back School Program. Each patient received the intervention once per week for a total of 3 weeks. During the first treatment visit, the patient watched three videos about spine anatomy, common causes of LBP, and body mechanics for daily activities.[23] Subsequently, the patients received individual instructions and supervised practice of their home program by experienced licensed physical therapists at UCIMC and trained experienced licensed chiropractors at LACC. These programs included recommended sitting and standing neutral postures, body mechanics, and home exercises (lumbar flexion, extension, stretching, and stabilization). The programs were divided into three sessions with different content to maintain the patient's interest and compliance with the program. Duration of daily walking was 20, 30, and 30 minutes for the first, second and third weeks. The patients were provided with three weekly logs to record their compliance with the daily exercise programs.

Myofascial Therapy Program. Each patient received therapy three times per week for 3 weeks. Trained clinicians (physical therapists at UCIMC and chiropractors at LACC) performed the myofascial therapy at each facility. The myofascial therapy program included intermittent Fluori-Methane sprays[25,26] and 5 to 10 stretches after 3 to 5 seconds of each isometric contraction at 50% to 70% of their maximal effort, ischemic compressions using a massage finger, stripping massage along the orientation of the taut bands by the two thumbs for 3 to 5 strokes, and hot packs for 10 minutes at the completion of therapy. The involved lumbar paraspinal or gluteal muscles, as indicated by the examiner on the Assessment Recommendation form, were treated. Additional muscles also could be treated if the clinician believed that it was clinically necessary.

Joint Manipulation. Each patient received therapy three times per week for 3 weeks. Experienced licensed chiropractors with a 5-year minimum of clinical experience delivered joint manipulation at both sites. The joint manipulations, consisting of high-velocity and short-amplitude specific thrusting manipulations (the "Diversified" technique), were performed in the lumbar and/or sacroiliac regions (*i.e.*, the tender locations indicated by the examiner on the Assessment Recommendations form or other levels clinically deemed by chiropractor to need therapy). Side or sitting posture was allowed. Drop table techniques also were allowed. All treatments were given on Leander Model 900 EZ Tables (Leander Health Technologies, Port Orchard, WA). No flexion distraction or mobilization was allowed.

Combined Joint Manipulation and Myofascial Therapy. The patients received both joint manipulation and myofascial therapy treatments three times per week for 3 weeks. Clinicians in the three manual treatment groups were not allowed to offer any recommendations for home exercises or self-care except some ice if the pain flared up after treatment.

Compliance. For back school, full compliance was defined as the performance of prescribed exercises at least 5 days a week for 3 weeks. For the other three groups, it involved attending all nine treatments. For back school, no compliance was defined as the performance of exercises fewer than 2 days a week. For the other three groups, it involved missing all the sessions. Partial compliance was defined for the remaining performance or attendance.

Patient Incentive. As an incentive, $50 was offered for participation in the research: $25 at completion of the therapy and $25 after the 6-month follow-up evaluation. If patients did not

Table 1. Baseline Demographic Characteristics Based on Randomization

Characteristic	Combined Group (N = 52)	Joint Manipulation (N = 49)	Myofascial Therapy (N = 51)	Back School (N = 48)
Age (yr) (mean ± SD)	48.4 ± 13.7	47.4 ± 14.0	49.0 ± 14.8	47.9 ± 13.7
Pain (wk) (mean ± SD)	11.5 ± 7.2	11.8 ± 7.2	11.8 ± 6.8	10.7 ± 6.6
Sex [no. (%)]				
Male	35 (67.3)	33 (67.3)	34 (66.7)	29 (60.4)
Female	17 (32.7)	16 (32.7)	17 (33.3)	19 (39.6)
Preference [no. (%)]				
Chiropractic	24 (46.2)	29 (59.2)	24 (47.1)	24 (50)
Physical therapy	28 (53.8)	20 (40.8)	27 (52.9)	24 (50)

No statistically significant differences were observed.

return for the 6-month follow-up assessment, three free chiropractic treatments were offered after they had completed the 6-month follow-up assessment.

Statistical Analyses. Double data-entry verification procedures were used, and manual verification was performed on major efficacy variables. Data were maintained using the INFORMIX database management system (Informix, IBM, Armonk, NY) running under a multiuser UNIX system (Santa Cruz Operation, Caldera International, Lindon, UT). Data were exported to SAS data sets (SAS Institute, Cary, NC) for statistical analysis. All statistical analyses were based on an intent-to-treat methodology such that all data were analyzed regardless of patient compliance. The analyses were performed using one-way analysis of variance (ANOVA) on the four groups, with contrasts for comparisons of individual groups. In some cases, analyses were adjusted for multiple comparisons using the Tukey test. Categorical variables were analyzed using Fisher's exact test. Two-sided *P* values are reported. The significance level was set at 0.05.

■ Results

Demographics and Baseline Characteristics

Between May 8, 1996 and June 30, 1998, both treatment sites received a total of 5925 telephone calls. Among these, 4291 (72%) were excluded on the basis of chronicity. The 282 interested patients who potentially qualified on the telephone underwent the physical examinations at either LACC or UCIMC. Altogether, 206 qualified patients were entered into the study. Of these

Table 2. Additional Baseline Characteristics of Patients

Characteristic	Combined Group [n/N (%)]	Joint Manipulation [n/N (%)]	Myofascial Therapy [n/N (%)]	Back School [n/N (%)]
Race				
White	40/52 (76.9)	35/49 (71.4)	34/51 (66.7)	33/46 (71.7)
Asian	7/52 (13.5)	5/49 (10.2)	10/51 (19.6)	5/46 (10.9)
Hispanic	3/52 (5.8)	7/49 (14.3)	3/51 (5.9)	6/46 (13.0)
Black	0/52 (0.0)	1/49 (2.0)	3/51 (5.9)	0/46 (0.0)
Native American	1/52 (1.9)	0/49 (0.0)	0/51 (0.0)	1/46 (2.2)
Other	1/52 (1.9)	1/49 (2.0)	1/51 (2.0)	1/46 (2.2)
First episode	8/52 (15.4)	11/49 (22.4)	16/51 (31.4)	10/46 (21.7)
Previous episode >6 mo to resolve	10/44 (22.7)	7/39 (17.9)	8/36 (22.2)	12/38 (31.6)
Treatment for previous episode				
Chiropractic	23/52 (44.2)	16/48 (33.3)	24/51 (47.1)	19/46 (41.3)
Satisfactory	17/22 (77.3)	13/16 (81.3)	18/24 (75.0)	8/19 (42.1)
Physical therapy	20/52 (38.5)	9/48 (18.8)	11/51 (21.6)	16/46 (34.8)
Satisfactory	15/19 (78.9)	3/ 9 (33.3)	9/11 (81.8)	11/16 (68.8)
School level				
Some high school	0/52 (0.0)	0/49 (0.0)	1/51 (2.0)	2/47 (4.3)
High school diploma	3/52 (5.8)	1/49 (2.0)	0/51 (0.0)	1/47 (2.1)
Some college	14/52 (26.9)	12/49 (24.5)	18/51 (35.3)	19/47 (40.4)
College degree	21/52 (40.4)	24/49 (49.0)	20/51 (39.2)	18/47 (38.3)
Postgraduate	14/52 (26.9)	12/49 (24.5)	12/51 (23.5)	7/47 (14.9)
Never smoked	33/52 (63.5)	29/49 (59.2)	31/51 (60.8)	29/46 (63.0)
Exercise >20 mins, ≥1 time/wk	40/52 (76.9)	39/49 (79.6)	39/51 (76.5)	32/46 (69.6)
Stretching exercise ≥1 time/wk	35/52 (67.3)	30/49 (61.2)	33/51 (64.7)	28/46 (60.9)
Lifting heavy objects	7/50 (14.0)	15/49 (30.6)	11/51 (21.6)	11/46 (23.9)
Repetitive bending	21/50 (42.0)	20/49 (40.8)	24/50 (48.0)	22/46 (47.8)
Lifting forward bent	10/51 (19.6)	10/49 (20.4)	16/51 (31.4)	11/46 (23.9)
Slouched sitting	23/49 (46.9)	26/49 (53.1)	30/50 (60.0)	21/46 (45.7)
Work with vibration equipment	4/50 (8.0)	2/49 (4.1)	8/50 (16.0)	5/46 (10.9)
Family with history of LBP	14/51 (27.5)	16/49 (32.7)	18/51 (35.3)	17/44 (38.6)

Overall comparisons using the Fisher exact test indicated only one statistically significant effect. Patients who had chiropractic treatment and were assigned to the back school were less likely to consider chiropractic treatment as successful ($P = 0.046$). This could be spurious because when a large number of statistical comparisons are performed some are bound to be significant.

Table 3. Primary Outcome Variables of Visual Analog Pain Scores (VAS) and Roland–Morris Activity Scores (RMAS) at Baseline, After 3 Weeks of Care, and at the 6-Month Follow-up

	Combined Group		Joint Manipulation		Myofascial Therapy		Back School	
Variable	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
VAS (cm)								
Baseline	52	3.75 (2.18)	48	3.66 (1.90)	51	4.05 (2.15)	48	4.14 (2.10)
3 wk	48	2.04 (1.35)	45	2.58 (1.93)	49	2.78 (1.82)	42	2.13 (1.28)
6-mo follow-up	49	2.24 (2.01)	40	2.40 (2.41)	47	2.99 (2.28)	42	2.29 (1.98)
RMAS (# of yes items)								
Baseline	52	7.62 (4.58)	48	8.40 (5.16)	49	8.35 (4.57)	48	7.92 (4.15)
3 wk	48	3.73 (3.76)	45	4.42 (4.92)	49	5.80 (5.12)	42	4.26 (3.52)
6-mo follow-up	48	3.56 (3.46)	41	3.29 (4.73)	47	5.06 (4.78)	42	3.48 (3.86)

Overall ANOVAs were not statistically significant. Individual contrasts indicated a significant difference between the combined treatment and myofascial therapy at 3 weeks for both VAS ($P = 0.027$) and RMAS ($P = 0.022$), but the Tukey test, which adjusts for multiple comparisons, showed no significant effects.

patients, 200 received some treatments. Baseline variables controlled by the adjusted randomization scheme are shown in Table 1. Other baseline variables are shown in Table 2. There were no significant important differences between the four groups in terms of these variables.

Dropout and Compliance

Of the 200 patients treated, 184 (92%) returned after 3 weeks of care and 178 (89%) returned 6 months later for assessments. Fisher's exact test showed a significant difference in compliance among all the groups ($P = 0.008$). Full compliance was noted for 47 of the 52 treated patients in the combined therapy group, 43 of the 49 treated patients in the joint manipulation group, 47 of the 51 treated patients in the myofascial therapy group, and 33 of the 48 treated patients in the back school group. The back school group was the least compliant.

Cointerventions

During the 3-week trial period, only a minor proportion of the patients (10%) reported use of over-the-counter pain medications (*e.g.,* ibuprofen, acetaminophen). Six patients reported eight visits to health care practitioners. Among these, two visits were related to LBP. Therefore, treatment contamination was insignificant.

After 3 weeks of therapy, 12 patients reported continuing care for LBP: 5 patients in the combined therapy group, 1 patient in the joint manipulation group, 3 patients in the myofascial therapy group, and 3 patients in the back school group. Altogether, 33 visits were reported: 16 visits in the combined therapy group, 1 visit in the joint manipulation group, 13 visits in the myofascial therapy group, and 3 visits in the back school group. During the study, 18 health care practitioners were consulted: 8 chiropractors, 5 medical doctors, 2 physical therapists, 1 osteopath, 1 acupuncturist, and 1 foot reflexologist.

Primary Efficacy Variables

Factorial analyses of variance using treatment center (UCIMC *vs* LACC) and treatment by center interaction term showed no statistically significant effects. Table 3 shows pain and activity scores. All the groups showed significant reductions in pain and activity scores after 3 weeks of care, but no further significant changes at the 6-month follow-up assessment (Figures 1 and 2). The Tukey test, which adjusts for multiple comparisons, showed no significant difference among the four groups after 3 weeks of care, although individual contrasts indicated a significant difference between combined treatment and myofascial therapy for both the VAS ($P = 0.027$) and the Roland–Morris activity scale ($P = 0.022$). Although the difference in activity scores between the joint manipulation group and myofascial therapy group approached significance ($P = 0.053$) at the 6-month follow-up assessment, this effect disappeared when change-from-baseline data were used. Analyses also were conducted in which patients who did not return for 3-week or 6-month assessments were arbitrarily assigned to the worst possible scores. Analyses using rank-order methods found no significant differences between the groups.

For the monthly telephone follow-up assessments, statistically significant differences in activity scores were

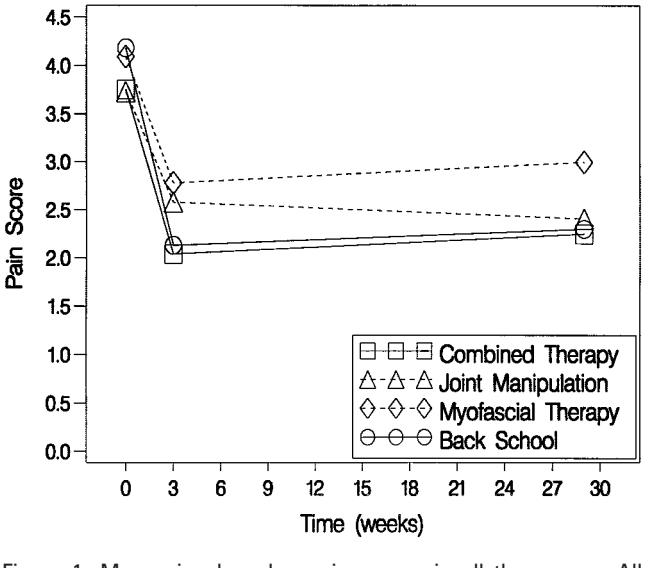

Figure 1. Mean visual analog pain scores in all the groups. All showed significant improvement after 3 weeks of treatment. The difference between combined therapy and myofascial therapy was statistically significant after 3 weeks of treatment. No other between-group difference was found either after 3 weeks of treatment or at the 6-month follow-up assessment.

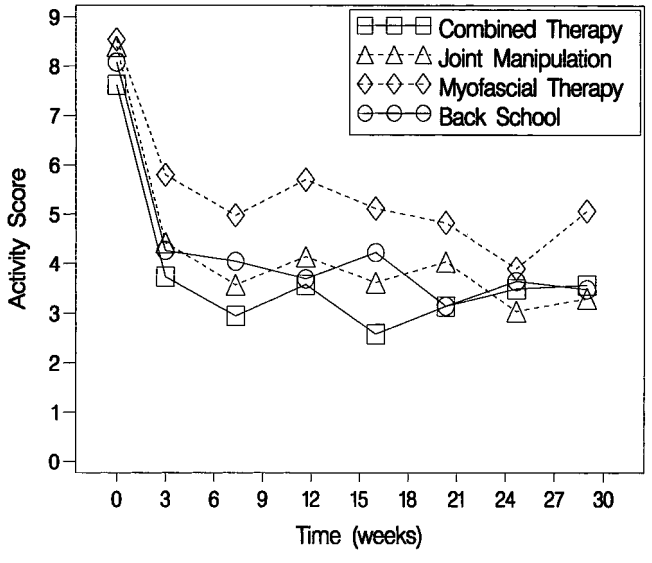

Figure 2. The mean Roland–Morris activity scores in all the groups. The difference between combined therapy and myofascial therapy was statistically significant after 3 weeks of treatment, and at the 1-month and 3-month follow-up assessments. No other between-group difference was found either after 3 weeks of treatment or at the monthly follow-up assessments. However, when change-from-baseline scores were used, no significant differences between the groups were found.

found between the combined group and the myofascial therapy group at the 1-month and 3-month follow-up assessments (Figure 2). However, change-from-baseline scores yielded no statistically significant differences.

Secondary Efficacy Variables

Other efficacy variables (*i.e.*, MOS 36-Item Short-Form Health Survey scores, Minnesota Multiphasic Personality Inventory scores, trigger point and articular dysfunction evaluations, pressure pain thresholds, and gross spine motions [data not shown]) produced scattered statistically significant effects. However, these showed no apparent pattern and were no more frequent than would be expected given the large number of significance tests performed.

Patient Confidence and Satisfaction

At baseline, the myofascial therapy group had the highest confidence scores among the four groups, which were significantly different from the scores for joint manipulation ($P = 0.034$) (Table 4). After 3 weeks of care and at the 6-month follow-up assessment, no significant differences were observed between any two groups.

In terms of patient satisfaction, all the groups rated the therapies between very good and excellent after 3 weeks of care and at the 6-month follow-up assessment. In terms of overall results, no statistically significant differences were observed between any two groups after 3 weeks of care and at the 6-month follow-up assessment.

Complications

At the exit interviews, 23 patients reported adverse effects from the treatments: 7 in the combined group, 6 in the joint manipulation group, 4 in the myofascial therapy group, and 6 in the back school group. These adverse effects were mostly transient exacerbations of symptoms, except for one case of constant tinnitus in the myofascial therapy group. Two of the patients claimed that treatment (joint manipulation) had aggravated their conditions. Both received conservative care at no charge after 3 weeks of therapy and were released when their pain became stabilized.

■ Discussion

The major finding of this study was that back school therapy and specific manual procedures yielded equally effective outcomes. The effectiveness of back school was particularly surprising because the group received no manual therapies and originally was conceptualized as a control group for manual therapies. A limited qualitative inquiry involving 95 cases discovered that a number of patients expressed unexpected high satisfaction with the back school program. They attributed this to their principal motivation for joining the study: to learn the cause of their problem, to discover how future bouts of pain could be avoided, and to gain more control over LBP in the event that it returns. The authors suspect that the back school program apparently met the patients' expectations, and that the information content of the program might have contributed to its success. It should be noted that clinicians were not allowed to provide such information to the patients in the other three manual treatment groups. However, 21% of the patients in the

Table 4. Confidence Score* at the Baseline, After 3 Weeks of Treatment, and at the 6-Month Follow-up

	Combined Group		Joint Manipulation		Myofascial Therapy		Back School	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
Baseline	52	7.27 (1.96)	47	6.72 (1.74)	50	7.52 (1.59)	47	6.79 (2.20)
After 3 wk	48	8.00 (2.34)	45	7.02 (2.68)	49	7.45 (2.49)	42	7.43 (2.31)
6-mo follow-up	48	7.10 (2.74)	41	6.63 (2.98)	47	6.68 (2.92)	41	7.52 (2.25)

Overall ANOVAs were not statistically significant. Individual contrasts indicated a significant difference between joint manipulation and myofascial therapy at baseline ($P = 0.039$), but the Tukey test, which adjusts for multiple comparisons, showed no significant effects.
* Scale of 0 = will not work to 10 = will work.

back school group could not do the home exercises 5 days per week as required by the study. Clinicians may need to consider the motivation and time commitment of the patient when prescribing the back school program.

This study supported previous findings that spine manipulation was effective in reducing pain, increasing lumbar mobility,[19] and reducing functional disability[13] for subacute LBP. In contrast to a similar study,[13] the current study did not detect a superiority of joint manipulation over therapies in terms of effect. The following difficulties encountered during the trial might have influenced the results. First, the study did not reach its recruitment goal of 300 patients. However, the authors believe the study still should have had sufficient power to detect clinically significant differences between groups. Using the method described by Lachin[16] for the 3-week VAS data, assuming a two-sided alpha level of 0.05, a sample size of 46 per group, and a standard deviation of 1.65 (actual standard deviations ranged from 1.28 to 1.93), the power to detect a difference of 1.00 between two groups was 82%. Second, most of the patients used a variety of health care systems. Therefore, collection of the health service use data was difficult.

The findings of this study have three limitations. First, the findings are limited to patients with subacute but not acute or chronic LBP. Second, neither chiropractic or physical therapy was studied. Instead, some manual procedures used by both professions were investigated. The purpose was to define the most effective "procedure" for clinicians and policy makers. Third, the potential for a "global treatment act" was greatly diminished in this study because a standardized treatment protocol was followed and the clinicians were instructed to refrain from giving advice. The patients also were questioned after the therapy was completed to determine whether clinicians followed the protocol. Therefore, the authors believe that the potential for a global treatment act, as seen in clinical practice, was greatly diminished in this study.

In conclusion, for subacute LBP, joint manipulation, myofascial therapy, and back school appeared to be as effective as combined joint manipulation and myofascial therapy for reducing pain and functional disability. The improvement gained after 3 weeks of treatment was well maintained for 6 months. Unfortunately, the absence of an adequate control group leaves the authors unable to refute the objection that the observed improvement in pain and function with joint manipulation, myofascial therapy, or back school merely reflects the effect of natural history, regression to the mean, and placebo. Future clinical trials comparing the relative effectiveness of different approaches for LBP should make every effort to include an adequate control group. More research also is needed to determine whether further treatment with joint manipulation, myofascial therapy, or back school after 3 weeks of care can reduce more pain and functional disability or whether such treatment simply is a waste of resources.

■ Key Points

- For subacute low back pain, combined joint manipulation and myofascial therapy was as effective as joint manipulation or myofascial therapy alone.
- Therefore, the policy makers could disallow the combination of joint manipulation and myofascial therapy for patients with subacute low back pain.
- Additionally, back school was as effective as joint manipulation and myofascial therapy.
- Future trials on the relative effectiveness of different treatments should always include an adequate control or sham group to rule out the potential effect of natural history, regression to the mean, and placebo.

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