Back School in a First Episode of Compensated Acute Low Back Pain: A Clinical Trial to Assess Efficacy and Prevent Relapse

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ABSTRACT. Leclaire R, Esdaile JM, Suissa S, Rossignol M, Proulx R, Dupuis M. Back school in a first episode of compensated acute low back pain: a clinical trial to assess efficacy and prevent relapse. Arch Phys Med Rehabil 1996;77: 673-9.

Objective: To assess the efficacy of a back school program for patients with a first episode of acute work-related low back pain requiring compensation.

Design: A randomized single-blind controlled trial.

Setting: A private physiatric outpatient clinic.

Patients: The mean duration of low back pain was 15 days.

Intervention: Eligible patients were randomized to a standard treatment program that included daily physiotherapy (n = 86) or the same program with the addition of back school (n = 82). The back school program consisted of three 90-minute sessions given by a single trained instructor at 0, 1, and 8 weeks.

Main Outcome Measures: The primary outcomes were the time off work for the presenting episode of back pain and the number and duration of recurrences in the year following the study onset. Secondary outcomes included the level of pain, spinal mobility, active straight-leg raising, and functional disability assessed by the Oswestry and Roland-Morris scales.

Results: Those randomized to the back school group gained significantly more knowledge, based on the multiple choice examination (p = .0001) and performed the exercise program significantly better (p = .0001) than the standard care group. There were no differences between the two treatment groups for either of the primary outcomes. The median time to return to work from randomization was 33 days for both the back school and the standard care groups (p = .48). The number of compensated recurrences of low back pain over 1 year was similar (back school = 14, standard care = 10, p = .16), as was the median duration of these episodes (back school = 25 days, standard care = 70 days, p = .21). There were no significant differences favoring the back school group for any of the secondary outcomes at the posttreatment, 6-month, or 12-month assessments.

Conclusion: A back school intervention in addition to standard care resulted in no reduction in the time to return to work or the number or duration of recurrences of low back pain requiring compensation over a period of 1 year.

IN 1969 the Swedish Back School program was introduced at the Danderyd Hospital.[1] The program included small group education sessions on anatomy and back function, correct techniques for carrying and lifting, and a simple exercise program for the back. The objectives were to assist coping with back pain and to prevent relapse.[1,2] Eight years after its introduction, a randomized trial demonstrated that this back school program reduced the duration of low back pain and time lost from work in workers with acute low back pain.[3] With one exception,[4] uncontrolled observational studies reported impressive benefits,[5-11] leading to widespread enthusiasm for back school programs worldwide. An additional randomized trial demonstrated the efficacy of back school combined with a work-hardening and a rehabilitation program in reducing time lost from work for patients with subacute low back pain.[12,13] Other controlled trials, however, have reported conflicting results regarding benefit for pain, physical disability, mobility of the lumbar spine, and time lost from work.[14-20] Thus, only 2 controlled studies,[3,12] both from Sweden, have demonstrated that back school reduces the time lost from work.

Because low back pain and recurrences are an expensive work-related condition,[21-23] and because doubt exists as to the efficacy of a back school program, we conducted a randomized controlled trial of a highly standardized program in persons with their first episode of acute work-related low back pain requiring compensation. We assessed the efficacy of the program to reduce time lost from work and to reduce the recurrence of low back pain requiring compensation over a 1-year period. We also evaluated pain, spinal mobility, straight-leg raising, and physical disability as secondary outcomes.

METHODS

Selection of Patients

The criteria for inclusion in the study were: low back pain of less than 3 months' duration; patients' ages between 18 and 50 years, inclusive; inability to work because of low back pain; compensation by the Quebec Workers Compensation Board for the low back pain; and, provision of informed consent. All employees who develop a low back condition at work are eligible for compensation in Quebec. The reasons for exclusion were the following: work history of less than 1 year with the same employer; any previous episode of low back pain for which compensation had been received; any previous low back pain that had lasted more than 1 week; radiation of the low back

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pain beyond the knee; evidence of a herniated lumbar disc, including any neurological deficit; cancer, including multiple myeloma; ankylosing spondylitis; spinal stenosis; Paget's disease; spondylolisthesis of grade 1 or greater; other serious medical illness likely to compromise the individual's ability to participate in all aspects of the study, including serious mental illness; and pregnancy or plans to become pregnant in the ensuing 12 months.

Study Site

The study was conducted at a physiatry institute. A referral from a community physician is required for an individual to be evaluated at the institute. Data analysis was by a university's Department of Epidemiology and Biostatistics. Ethics committee approval was received from a hospital Research Institute Ethics Review Board.

Randomization

The schedule of randomization was based on a table of random numbers with blocking in groups of 4. After an assessment for eligibility, participants were randomized to the back school program or the control program.

Control program. Control group patients (n = 86) received a standard back care program that consisted of rest, analgesics, nonsteroidal anti-inflammatory drugs as appropriate, and daily physiotherapy. The standard physiotherapy program was supervised by a single physiatrist (RP) and was administered by physiotherapists at the Institute. The treatment included hot or cold packs, massage, ultrasound and/or transcutaneous nerve stimulation for pain relief, and low back exercises. The exercises, based on an adapted form of flexion exercises[24] and isometric flexion strengthening of abdominal muscles[25] included pelvic tilt, unilateral and bilateral knee flexion stretching the low back, and isometric abdominal strengthening and psoas stretching, all performed in a supine position. The exercise program was progressive and adapted to the individual tolerance of each patient during the recovery period. Patients were instructed to repeat the 5 exercises, 10 times each day for the rest of their lives. The rationale for the flexion exercises was to diminish muscle spasm, increase mobility, and strengthen the abdominal muscles. Each session lasted 30 minutes.

Back school. Back school patients (n = 82) received the same standard back care program and daily physiotherapy, with the addition of a back school program. The program was designed by a Delphi technique[26] using physiatrists, a back school therapist, educators, and audiovisual specialists. Specific aims of the program were to educate patients about aspects of low back pain, including the causes of low back problems and resultant pain, the role of exercise in improving the subjects' current status, and ways to prevent a recurrence of pain. Subjects were also taught techniques for dealing with low back pain through lifestyle changes and coping mechanisms, and were given flexion back exercises to do at home. The objectives were to increase self-care behaviors in patients[27] and to promote an active attitude for return to health.[20,28]

The back school program consisted of three 90-minute sessions, with a maximum of 4 participants at any class. One instructor taught all the classes. Two videotapes were shown at the first class with a question and answer session following each showing. The first video (24 minutes) described the anatomy of the lumbosacral spine and the pathophysiology of low back disorders. The second (15 minutes) described the prevention and treatment of low back pain, with the focus being on a regular home exercise program with flexion exercises. At a second session one week later, participants were taught the lumbar flexion exercises,[25] were informed about the need for good posture, were shown techniques to prevent low back problems both at home and work, and were told how to manage low back pain at home.[2] Participants received an illustrated pamphlet on the exercise program.[3] At the third session, eight weeks after the first, the patient's performance of the exercise program was assessed and, when necessary, errors in execution were corrected. All issues relating to the prevention of low back pain were reviewed.

Blinding

Participants and the instructor were not blind to the intervention; however, the physician who determined when the patient could to work and the physiotherapists were blinded to the treatment group. When the participant returned to work, the study physician was asked whether he thought the patient had been assigned to the back school or to the control group.

Primary Outcomes

There were 2 primary outcomes for the trial: (1) the time from study entry to return to work; and (2) among those who returned to work, the frequency and the duration of recurrence of low back pain requiring compensation in the 12 months after enrollment. The data on both outcomes were obtained from the study participants and subsequently confirmed in the Quebec Workers Compensation Board database.

Secondary Outcomes

Secondary outcomes included the level of pain based on the visual analog scale, the amount of disability based on the Roland-Morris and Oswestry questionnaires, and the physical measures of spinal mobility (modified Schober, fingertip-floor, lateral bending) and active straight-leg raising tests.

Zero time assessment. Participants had a complete medical history and physical examination, including a detailed review of antecedent treatments for the episode of low back pain. The following measurements to assess lumbar movement were recorded: modified Schober test measured in centimeters[29-32]; fingertip-floor test in centimeters[33]; lateral bending test in centimeters[34,35]; and, active straight-leg raising measured with a goniometer in degrees.[36,37] All participants completed self-administered Roland-Morris[38,39] and Oswestry[40] disability questionnaires. The Roland-Morris questionnaire has been shown to be reliable, valid, and sensitive to change in persons with low back pain.[41] The Oswestry questionnaire has been demonstrated to be reliable and has been used extensively in low back pain studies and trials.[15,42] The Oswestry questionnaire is scored 0 to 100, and the Roland-Morris 0 to 24. The Roland-Morris score was converted to a 0 to 100 scale to enhance comparability. Higher scores represent greater disability. A horizontal 10-cm visual analog pain scale (modified from Scott and Huskisson[43]) was completed (left arm labelled "absolutely no pain," right arm labelled "the most severe pain you can imagine").

Follow-up assessments. All study participants answered an 8-question survey to assess personal satisfaction with the quality of their care, after treatment was completed. They also completed a multiple choice test of 25 questions to assess their knowledge about low back pain at study entry, the completion of treatment (the time of return to work), and 6 and 12 months after zero time. At the completion of treatment and at 6 and 12 months after study entry, all participants also completed a Roland-Morris questionnaire,[38] an Oswestry questionnaire,[40] and a 10-cm visual analog pain scale, and were examined for spinal

mobility (modified Schober,[29,32] fingertip-floor,[33] lateral bending[34,35]) and active straight-leg raising.[36,37] The patients performed the exercise program in the presence of the research assistant who was blind to treatment group assignment. The research assistant rated the exercise as "not done" (score 0), "inadequate" (score 1), "adequate" (score 3), "excellent" (score 5) for a total range of 0 to 25. Compliance with the exercise program was assessed by a self-reported questionnaire at the completion of treatment and at 6 and 12 months. Participants each received $10.00 for transportation expenses at the 6- and 12-month follow-up visits.

Statistical Analysis

To compare the baseline characteristics of the 2 randomized groups, chi-square analysis or Student's t test was performed, as appropriate, for descriptive purposes. An intent-to-treat analysis was done for the outcomes. For the first primary outcome—time to return to work—survival analysis by the product-limit method was used to describe the return to work distribution curve and the log-rank test was used to compare the 2 groups.[14] The other primary outcome—frequency of recurrence of low back pain requiring compensation—was evaluated by Poisson rates method because multiple recurrences were found within subjects. Patients who recovered would of necessity return to work. For this reason, person-years were cumulated only during the time that the patient was working and thus at risk of recurrence. We obtained return to work and recurrence information for subjects who withdrew early from the study from the computerized records of the Quebec Workers Compensation Board databases.

Secondary outcomes were assessed by repeated measures analysis of variance (ANOVA) for an overall assessment throughout the entire follow-up, and by linear regression, for an assessment at each follow-up visit, controlling for baseline values. These analyses of the secondary outcomes were performed for patients who had data available.

The power of the study was based on detecting a difference in the frequency of recurrence of 10%, specifically, 15% (standard therapy group) versus 5% (back school). Based on the total of 168 patients and $p = .05$ (one-tailed), the power was 70%.

The data were analysed on a microcomputer using SAS 1987 software.[a]

RESULTS

Study Population

During the study period January 1989 through January 1993, 416 consecutive outpatients with a first episode of low back pain of less than 3 months' duration were assessed for eligibility. Of these patients, 244 (58.7%) were excluded for the following reasons: previous episode of low back pain of longer than 1 week's duration ($n = 65$, 26.6%); neurological deficit ($n = 46$, 18.9%); had already returned to work ($n = 34$, 13.9%); radiation of the low back pain beyond the knee ($n = 15$, 6.1%); age younger than 18 or older than 50 years ($n = 19$, 7.8%); radiological exclusions (eg, spondylolisthesis, ankylosing spondylitis) ($n = 31$, 12.7%); concomitant medical illness likely to compromise ability to participate ($n = 23$, 9.4%); work history of less than 1 year with the same employer ($n = 7$, 2.9%); and pregnancy ($n = 4$, 1.6%). Of the remaining 172 patients, 170 (98.8%) agreed to participate and were randomized, 84 to the back school group and 86 to the standard treatment group. Two patients randomized to the back school group were excluded immediately after randomization because they were protocol violators: one had grade 1 spondylolisthesis and the other had a herniated lumbar disc.

Table 1: Clinical Characteristics at the Time of Randomization

	Back School ($n = 82$)	Standard Therapy ($n = 86$)	p Value
Age (yr)	31.9 (7.7)	32.2 (8.0)	.838
Men (%)	57	59	.794
Smokers (%)	54.9	59.3	.562
Extent of pain			
To buttock crease (%)	84.1	89.5	.301
From crease to knee (%)	15.9	10.5	.301
Number of days off work prior to study entry	14.4 (11.5)	15.7 (13.2)	.497
Previous treatment			
Analgesics (%)	42.7	47.7	.478
NSAIDs (%)	57.3	54.7	.598
Physiotherapy (%)	1.2	2.3	.588
Spinal measures			
Modified Schober (cm)	5.4 (1.2)	5.6 (1.4)	.302
Fingertip-floor (cm)	24.0 (14.7)	21.8 (16.7)	.362
Lateral Schober			
Right (cm)	8.2 (5.2)	8.3 (4.4)	.803
Left (cm)	7.7 (4.9)	7.6 (4.0)	.944
Straight-leg raising			
Right (degrees)	62.1 (15.5)	65.4 (14.8)	.160
Left (degrees)	63.9 (13.1)	64.2 (15.6)	.900
Pain			
Visual analog scale (cm)	4.2 (2.1)	4.2 (1.8)	.964
Disability Scores (0-100)			
Roland-Morris	45.9 (18.1)	42.7 (19.1)	.268
Oswestry	32.7 (14.0)	32.4 (14.8)	.920

Values are presented as mean (standard deviation).
Abbreviation: NSAID, nonsteroidal antiinflammatory drug.

The 2 groups resembled each other for all important demographic and clinical baseline characteristics (table 1). Of the 82 patients randomized to the back school group, 76 (93%) attended the first two instructional sessions and 58 (71%) attended the third review session. By the third session, 8 weeks after randomization, most patients had improved and returned to work. This likely contributed to the lower attendance at the final session.

In 6 instances the treating physician stated he believed the patient had been assigned to the back school program group; he was correct in all instances.

Primary Outcomes

Work absenteeism. Work absenteeism was defined by the number of work days lost secondary to low back pain after enrollment in the study. The median time to return to work for both the back school and standard care groups was 33 days. One month after the first visit the percentage (standard deviation) remaining off work was 63% (5%) for the back school group and 64% (5%) for the standard therapy group. At 2 months the percentages were 9.8% (3.3%) for the back school group and 5.8% (2.5%) for the standard care group. The number of censored patients was similar in both groups—2.4% in the back school group and 1.2% in the standard care group (figure 1).

Recurrence of low back pain (table 2). For the back school and standard care groups, 80 of 82 (98%) and 85 of 86 (99%) returned to full-time work, respectively. Among those returning to full-time work, there were 14 episodes of recurrent low back pain requiring compensation in the back school group (19.9 episodes of recurrent low back pain per 100 patients per year), while in the standard care group there were 10 episodes (13.3 episodes/100 patient-years) (Poisson test; $z = 1.40$; $p = .16$). The median duration of work absence for these recurrent episodes was 25 days (interquartile range: 14 to 58 days; range: 7

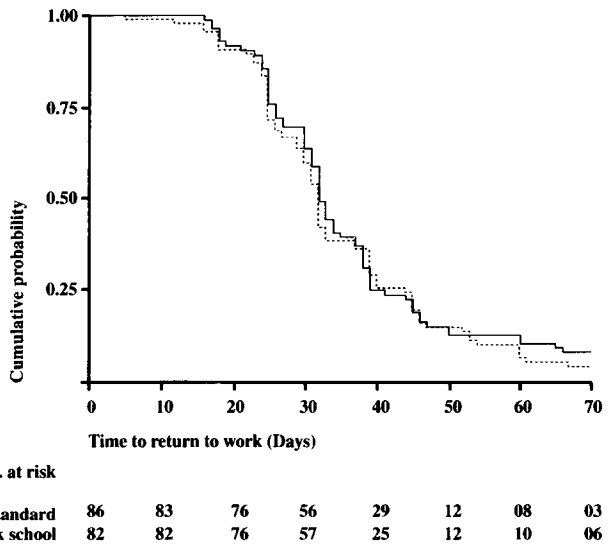

Fig 1. Life table depiction of time to return to work for patients randomly assigned to standard therapy alone (broken line) or back school (solid line). The number of patients in each treatment group who remained at risk at the end of each month are shown below the graph (p = .48 for the difference between the groups).

to 131 days) for the back school group and 70 days for the standard care group (interquartile range: 55 to 89 days; range: 6 to 143 days) (log-rank test $\chi_1^2 = 1.59$; $p = .21$). Thus, although the differences were not statistically significant, there were slightly more recurrences in the back school group than in the standard care group, but the duration of the recurrences among those subjects who had at least one recurrence favored the back school group.

Although only compensated episodes of recurrent low back pain were included in the primary outcome measure, data had also been obtained on episodes of recurrent low back pain that were not compensated. The standard care control group might have had a greater number of noncompensated recurrences than the back school group and thus biased the results against finding a benefit of the back school intervention. For this reason, the data on all recurrences were also analyzed. Compensated and noncompensated rates of recurrent low back pain were 37.0 in the back school group and 23.9 in the standard care group (Poisson test; Z = 1.75; $p = .08$). The median duration of the combined compensated and noncompensated episodes was 14 days in the back school group and 12 days in the standard care group ($p = .51$).

Secondary Outcomes

Results for primary outcomes were available on all study participants, but data on secondary outcomes were not available for all patients. The number of patients in each group who returned for examination at the end of treatment and at 6 and 12 months following the study onset are listed in table 3. Patients who did not return were encouraged to complete the pain scale and disability questionnaires; as a result, the number of participants who completed the questionnaire differs from the number of patients who had the physical examination measurements recorded. The major reason for dropping out was that the study subject felt completely well, had returned to work full-time, and did not wish to lose further time from work. Outcome variables measured at the study onset did not differ between subjects who completed all visits and subjects who did not.

The analyses below aimed to compare the interventions at each follow-up visit and are based on all subjects, as described in table 3. The overall p values in table 3 are based only on the subjects who attended all 4 sessions.

Pain level. Both groups demonstrated a marked but similar decline in pain levels over the 12-month course of the study. Most of the improvement occurred in the period of active treatment. There was a trend for those randomized to standard care to have a greater reduction in pain at the end of active treatment than those receiving back school (linear regression; difference favouring standard care .45 cm, 95% CI = −.10 to 1.00). There were no differences between the groups at 6 and 12 months.

Functional disability. The Oswestry and Roland-Morris questionnaires showed a marked improvement for both groups between preintervention and postintervention measures and a lesser improvement at 6 and 12 months. Both tests showed a greater improvement for the standard therapy patients over the back school patients at the end of the treatment period with a significant difference of 4.49 (95% CI, .87 to 8.12; $p = .02$) for the Oswestry score, and 6.54 (95% CI, 1.59 to 11.49; $p = .01$) for the Roland-Morris score, adjusted for the zero time values. No significant between group differences were found for these instruments at 6 and 12 months.

Mobility and straight-leg raising test. For both treatment groups, all of the spinal mobility measures had improved at the end of the treatment period. When the 2 groups were contrasted, the only difference was that the improvement in the Schober test at the end of active treatment favored the standard care group (difference = −.30, 95% CI −.54 to −.05, $p = .01$).

Knowledge, exercise performance, satisfaction. The back school group showed a significantly greater increase in knowledge, based on the multiple choice examination at the end of treatment, 6 months, and 12 months (table 4). The back school group also demonstrated a better performance of the exercise program at the end of treatment, and at 6 and 12 months, when this was assessed by the research assistant, blind to treatment assignment (table 4). Although self-reported compliance with the exercise program improved in both groups over the period of active treatment and subsequently declined at 6 and 12 months, there were no statistically significant differences between the two groups. At the completion of therapy, both groups

Table 2: Work Absenteeism and Recurrence of Low Back Pain in Back School and Standard Therapy Treatment Groups

	Back School (n = 82)	Standard Therapy (n = 86)	p Values
Patients returning to work—number (%)	80 (97.6)	85 (98.8)	.61*
Rate of return to work—patients returning per year (95% confidence interval)	7.8 (6.0; 9.5)	9.3 (7.3; 11.2)	.13
Rate of recurrent low back pain requiring compensation—episodes per 100 patient/years (95% confidence interval)	19.9 (9.5; 30.2)	13.3 (5.0; 21.5)	.16
Rate of recurrent low back pain (compensated and uncompensated)—episodes per 100 patient/years (95% confidence interval)	37.0 (22.8; 51.2)	23.9 (12.8; 34.9)	.08

The p values are computed with the large sample Poisson test, except for *, which is computed with the Chi-square test.

Table 3: Secondary Outcomes at Study Entry and Completion of Treatment and 6 and 12 Months After Study Onset for Back School and Standard Therapy Groups

Variable/Group	Time				p Value*
	Zero Time	End of Treatment	6 Months	12 Months	
Number assessed for spinal measures					
Back School	82	73	50	50	
Standard	86	83	65	63	
Spinal measures					
Modified Schober (cm)					
Back School	5.4 (1.2)	6.0 (0.8)	6.2 (0.7)	6.3 (0.8)	
Standard	5.6 (1.4)	6.3 (0.8)	6.3 (0.8)	6.3 (0.7)	.756
Fingertip-floor (cm)					
Back School	24.0 (14.7)	13.8 (10.6)	9.1 (9.3)	9.7 (9.8)	
Standard	21.8 (16.7)	12.1 (10.3)	9.3 (10.6)	10.7 (9.9)	.549
Lateral Schober (cm)					
Right					
Back School	8.2 (5.2)	5.5 (4.1)	5.4 (4.1)	6.0 (3.8)	
Standard	8.3 (4.4)	5.7 (3.8)	5.5 (4.2)	6.3 (3.9)	.782
Left					
Back School	7.7 (4.9)	5.3 (4.0)	5.3 (4.1)	6.0 (3.9)	
Standard	7.6 (4.0)	5.4 (3.8)	5.7 (4.6)	6.1 (4.0)	.780
Straight-leg raising (degrees)					
Right					
Back School	62.1 (15.5)	73.0 (9.8)	76.7 (10.0)	78.5 (8.8)	
Standard	65.4 (14.8)	74.1 (10.0)	78.0 (10.1)	78.2 (11.0)	.777
Left					
Back School	63.9 (13.1)	72.2 (10.4)	76.9 (12.0)	77.5 (11.1)	
Standard	64.2 (15.6)	74.1 (10.7)	77.9 (11.1)	77.5 (11.7)	.437
Number assessed for pain and disability					
Back School	82	73	62	64	
Standard	86	83	78	77	
Pain					
Visual analog score (0-10cm)					
Back School	4.3 (2.1)	1.7 (2.0)	1.5 (2.1)	1.4 (2.2)	
Standard	4.3 (1.8)	1.2 (1.6)	1.2 (1.7)	1.2 (1.8)	.284
Disability scores					
Roland-Morris (0-100)					
Back School	45.9 (18.1)	19.2 (17.9)	11.3 (17.1)	8.9 (15.2)	
Standard	42.7 (19.1)	11.8 (15.2)	7.9 (13.5)	6.9 (12.9)	.096
Oswestry (0-100)					
Back School	32.7 (14.0)	13.9 (13.9)	9.5 (12.0)	8.0 (12.1)	
Standard	32.4 (14.8)	9.3 (10.4)	6.9 (9.7)	6.1 (9.6)	.075

Values presented as mean (standard deviation).
* p values from repeated measures ANOVA among patients who completed the entire follow-up.

expressed a similarly high level of satisfaction (mean ± one standard deviation: back school = 39.9 ± 4.7; standard care = 39.7 ± 7.7) with the treatment program (p = .87).

DISCUSSION

The concept that education is beneficial for patients with low back pain understandably receives wide clinical support. As an educational intervention, back schools for low back pain have been used to prevent work absenteeism,[3,15,19,20] and to treat acute,[3,14,18] subacute,[12,13] and chronic[15-17,19] low back pain. Randomized studies of back school intervention, however, have produced conflicting results, and doubt has been raised as to their efficacy.[19,28,45]

We chose to study the first episode of work-related low back pain because the primary objective of a back school intervention is to reduce the frequency of recurrent low back pain. We hypothesized that intervention during the first episode would help detect any benefit resulting from back school. We found, however, no significant benefit of a standardized back school intervention over standard care for the treatment of a first episode of acute work-related low back pain.

It is possible that our failure to detect a benefit for back

Table 4: Assessment of Knowledge (Multiple Choice Examination) and Performance of Exercises

Variable	Time				p Value*
	Zero Time	End of Treatment	6 Months	12 Months	
Number Assessed					
Back School	82	73	50	50	
Standard Care	86	83	65	63	
Knowledge (0-100)					
Back School	46.8 (10.5)	73.0 (17.9)	72.8 (15.9)	71.9 (13.6)	
Standard Care	47.9 (11.7)	53.6 (12.0)	51.7 (12.1)	55.5 (13.6)	.0001
Exercise Performance (0-25)					
Back School	0.8 (2.7)	19.9 (4.7)	19.1 (5.6)	18.7 (6.2)	
Standard Care	0.7 (2.7)	13.0 (3.4)	11.9 (3.5)	11.9 (4.3)	.0001

Values are presented as mean (standard deviation).
* p values from repeated measures ANOVA among patients who completed the entire follow up.

school on time absent from work, recurrence of back pain, or any of the secondary outcomes resulted because the back school intervention was not sufficiently intense. The back school program tested in this study, however, was based on the precepts of the original Swedish back schools.[1-3] Both in the content of the program and the time spent in back school by the patient, our program resembled programs described in the literature.[27,45] Furthermore, there were measurable benefits from the back school on knowledge and performance skill. In other attempts to influence musculoskeletal conditions, educational intervention failed to influence the conventional outcomes, although it enhanced coping and self-efficacy.[46-51]

It is possible that this study lacked the power to detect the benefit of the back school intervention. For the first primary outcome—time to return to work—this seems unlikely, as both the back school and standard care groups took 33 days to return to work. For the second primary outcome—the frequency and the duration of recurrent episodes of low back pain requiring compensation—the back school group had more recurrent episodes, but they were of shorter duration. Neither result was statistically significant. Although a larger study might have demonstrated a benefit of back school on the duration of compensated recurrent episodes of low back pain, it might also have demonstrated a significantly deleterious effect on the frequency of recurrent episodes.

The present results pertain only to patients with a first episode of work-related low back pain and to the effect of back school when it is added alone to the standard therapy used in this study. It is possible that back school combined with some other intervention, such as a graded activity program,[12-13] may be effective in improving the outcomes evaluated in this study

Finally, it is important to recognize that the control group did not receive the same amount of attention as the back school group. The fact that the control group was not an attention control group would tend to bias the results in favor of the back school group, as those with the greater attention would be expected to improve more than those receiving less attention, yet no significant benefit of back school was identified for either of the primary outcomes.

In conclusion, for acute work-related low back pain we were unable to demonstrate that back school reduced the time to return to work or the number or duration of recurrent episodes of low back pain requiring compensation over 1 year compared to identical treatment without back school. In addition, there were no differences between these groups for the level of pain, functional status, and spinal mobility in the year after study enrollment.

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