

An active exercise and posture protocol reduced pain in acute whiplash injuries

Rosenfeld M, Gunnarsson R, Borenstein P. Early intervention in whiplash-associated disorders. A comparison of two treatment protocols. *Spine*. 2000 Jul 15;25:1782-7.

QUESTIONS

In patients with acute whiplash injuries, is an active treatment protocol more effective than standard treatment for reducing pain? Is early initiation better than delayed initiation of treatment?

DESIGN

Randomized {allocation concealed*}†, unblinded,* controlled trial with 6-month follow-up.

SETTING

29 primary-care units, 3 emergency wards, and several private clinics in Elfsborg County, southwestern Sweden.

PATIENTS

102 patients who had an acute whiplash injury and could be randomized within 96 hours after the traumatic event. Exclusion criteria were cervical fractures, cervical dislocation, head injury, previously known symptomatic chronic neck problems, alcohol abuse, dementia, serious mental illness, or terminal illness. Follow-up was 86% (mean age 36 y, 67% women).

INTERVENTION

Patients were allocated to 1 of 4 groups: to active treatment within 96 hours ($n = 21$) or after 2 weeks ($n = 22$) or to standard treatment within 96 hours ($n = 23$) or after 2 weeks ($n = 22$). Active treatment consisted of gentle, active, small-range and small-

amplitude rotational movements of the neck, which were repeated 10 times in each direction every hour when awake. The protocol included additional dynamic mechanical evaluation and an individual treatment program based on repeated movements when symptoms persisted for > 20 days. Standard treatment consisted of a leaflet providing information about injury mechanisms, advice on suitable activities, and instructions on postural correction.

MAIN OUTCOME MEASURES

Change in range of motion (ROM) and pain (assessed by using a 100-mm visual analog scale [VAS])

MAIN RESULTS

Fewer patients had pain after active treatment than after standard treatment ($P = 0.03$)‡ (Table). Active treatment within 96 hours led to reduced pain (mean VAS decrease 30 mm), whereas standard treatment led to an increase in pain (mean VAS increase 0.74 mm). Active and standard treatment within 2 weeks led to mean reductions of 15 mm

and 7.1 mm, respectively, on the pain VAS. More patients in the active-treatment group than in the standard-treatment group had no or low pain (≤ 10 mm on the VAS) at follow-up ($P = 0.01$)‡ (Table). Active and standard treatment did not differ for improvement in cervical ROM. Analysis of interactions between group and time showed that results were better when active treatment was initiated earlier rather than later.

CONCLUSIONS

In patients with whiplash injuries caused by motor-vehicle collision, an active exercise and posture protocol reduced pain. Early initiation (within 96 hours) was better than late initiation (after 2 weeks) of active treatment.

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For correspondence: Mr. M.E. Rosenfeld, Fagerhult Östergården 14, 51794 Tollsjo, Sweden. E-mail mark.rosenfeld@telia.com. ■

*See Glossary.

†Information provided by author.

‡ P values calculated from data in article.

Active vs standard treatment for whiplash injury at 6 months§

Outcomes	Active treatment	Standard treatment	RBI (95% CI)	NNT (CI)
No pain	30%	11%	172% (12 to 588)	6 (3 to 45)
No or low pain	44%	20%	121% (16 to 336)	5 (3 to 22)

§Abbreviations defined in Glossary; RBI, NNT, and CI calculated from data in article.

COMMENTARY

The study by Rosenfeld and colleagues adds to the growing literature on the rational treatment of acute soft-tissue injury. "Early mobilization as tolerated" is effective for both whiplash injury and acute low-back pain (1, 2). In this study, such "active management" is reflected in the use of the McKenzie method.

A major goal of the treatment of acute whiplash injury is prevention of the chronic whiplash syndrome. Whether the chronic condition is functional (chronic illness behavior) or organic (persistent tissue injury) is a matter of some debate (3).

It is recognized that chronic illness behavior may be engendered if a minor injury is overdiagnosed, overtreated, and overcompensated (4). Fear and anxiety about the outcome and scrutiny by the medico-legal system may cause the patient to expect pain, amplify it, and attribute the pain to the original event (4). This study's treatment protocol acts to allay fears of a serious injury and permits the patient to immediately exercise the injured part within comfort limits. Continued supervision also provides ongoing reassurance of a satisfactory outcome. Thus, the treatment may act primarily as a means to promote wellness behavior.

Those who favor the organic cause of chronic whiplash injury would emphasize that early mobilization may avoid the "disuse syndrome" that often leads to soft-tissue atrophy, decreased regional blood flow, and decreased healing (1). Regardless of its mechanism, an active exercise and posture protocol reduces pain in the acute whiplash injury and may decrease progression to the chronic whiplash syndrome.

*Robert A. Hawkins, MD
Wright State University
Centerville, Ohio, USA*

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