

Physiotherapy, aerobics, and training devices reduced pain intensity and frequency in chronic low-back pain

Mannion AF, Müntener M, Taimela S, Dvorak J. Comparison of three active therapies for chronic low back pain: results of a randomized clinical trial with one-year follow-up. *Rheumatology*. 2001 Jul;40:772-8.

QUESTION

In patients with chronic low-back pain (LBP), are physiotherapy, specific conditioning with training devices, and aerobics equally effective for reducing pain and disability?

DESIGN

Randomized {allocation concealed}†,* {unblinded*}†, controlled trial with 12-month follow-up.

SETTING

A hospital in Switzerland.

PATIENTS

148 patients (mean age 45 y, 57% women, mean LBP duration 11 y) who were < 65 years of age and had > 3 months of LBP with or without referred pain serious enough to require medical attention or absence from work. Exclusion criteria included constant or persistent severe pain, pregnancy, previous spinal surgery, and current nerve-root entrapment accompanied by neurologic deficit. 86% of patients completed follow-up.

INTERVENTION

Patients were allocated to 1 of 3 groups: physiotherapy ($n = 49$) in half-hour individual sessions with instruction on ergonomic principles and home exercises; low-impact aerobics ($n = 50$) in 1-hour sessions; or training devices ($n = 49$) in 1-hour sessions with specific trunk muscle reconditioning on

training machines. All treatments were given for 3 months.

MAIN OUTCOME MEASURES

Pain intensity (visual analog scale, score range 0 to 10), frequency of pain (pain free = 1, sporadic = 2, often = 3, or continuous = 4), and disability (Roland and Morris‡, score range 0 to 24).

MAIN RESULTS

Analysis was by intention to treat. Decreases in highest and average pain-intensity scores and pain frequency were seen in each group, but the groups did not differ in the extent of their decreases (12-mo data are in the Table). The devices and aerobics groups showed reductions in disability scores over time, but the physiotherapy group (which had an increase from post-treatment values in disability scores at 6 mo) differed statistically

from the other groups (12-mo data are in the Table).

CONCLUSIONS

In patients with chronic low-back pain, physiotherapy, specific conditioning with training devices, and aerobics were similarly effective for reducing the pain-intensity score and pain frequency. In contrast to the physiotherapy group, the aerobics and devices groups maintained their post-treatment reductions in disability at 12 months of follow-up.

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*See Glossary.

†Information provided by author.

‡Roland M, Morris R. *Spine*. 1983;8:141-4.

Physiotherapy vs aerobics vs devices in chronic low-back pain at 12 months

Outcomes	Mean score (baseline)			P value§
	Physiotherapy	Aerobics	Devices	
Highest pain (range 0 to 10)	4.8 (6.5)	4.7 (6.4)	4.5 (6.6)	0.99
Average pain (range 0 to 10)	3.2 (4.4)	3.2 (4.1)	2.9 (4.2)	0.90
Pain frequency (range 1 to 4)	3.0 (3.4)	2.9 (3.4)	2.8 (3.4)	0.82
Disability (range 0 to 24)	7.4 (8.0)	6.2 (7.6)	5.8 (8.3)	0.03¶

§Used a repeated measures analysis of variance.

||Higher scores = greater disability.

¶The physiotherapy group differed from the aerobics and devices groups in pattern of change over the course of the study.

COMMENTARY

Chronic LBP is a serious condition that is associated with substantial economic and societal costs. The well-designed study by Mannion and colleagues compared the relative effectiveness of 3 therapeutic programs for LBP. The investigators did not include an untreated control group, but previous systematic reviews have suggested that active physical measures are superior to usual care by practitioners (1). Given the lengthy duration of LBP in patients in the study by Mannion and colleagues, observed improvements would probably not be expected merely as part of the natural history of the disorder. Moreover, because participants were volunteers who were motivated to reply to an advertisement, the degree of observed improvement may be greater than might be attained in typical clinical practice.

Although most outcome measures were equally effective among the groups immediately after each 3-month program, self-reported disability and psychological disturbance levels in the physiotherapy group were shown to increase at 6 months of follow-up. This finding deserves further study to determine whether a clinically important difference exists between the outcomes that might be expected from these modalities.

Overall, this study confirms the work of other researchers, suggesting that different physical methods of chronic LBP treatment are similarly effective (2).

Ultimately, it seems that some form of active therapy is superior to self-care in chronic LBP. Clinicians should tailor their treatment approaches according to availability, cost, and patient preference.

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