Controlled endurance or strength training of the neck muscles decreases pain and disability in women with chronic neck pain

**Synopsis**


**Question:** Does intensive isometric neck strength training or lighter endurance training of neck muscles reduce pain and disability in women with chronic neck pain? **Design:** Randomised controlled trial. **Setting:** Rehabilitation centre in Finland. **Patients:** Female office workers, with constant or frequently occurring, nonspecific neck pain for more than six months, recruited from occupational health services. **Interventions:** Patients were assigned to either of two training groups or to a control group, with 60 in each group. The two training groups started with a 12 day institutional program at the rehabilitation centre, consisting of dynamic exercises for the shoulders and upper extremities and a common multimodal rehabilitation program. The endurance training group performed dynamic neck exercises, which included lifting the head up from the supine and prone positions. The strength training group performed high-intensity isometric neck strengthening and stabilisation exercises with an elastic band. Both groups were thereafter encouraged to exercise regularly three times a week at home. Exercise intensity and technique were checked at follow-up visits at two and six months. The control group spent three days at the rehabilitation centre and performed recreational activities in addition to the tests. The participants were advised to perform aerobic exercise three times a week for a half hour. They were not encouraged to perform any exercises to improve muscle strength.

**Results:** At the 12 month follow-up, neck pain was reduced by 61% and 69% in the endurance and strength training groups respectively, compared with 27% in the control group (p < 0.001). Neck disability was reduced by 36% and 43% in the endurance and strength training groups respectively, compared with 13% in the control group (p < 0.001). Range of motion and isometric neck strength had also improved statistically significantly in both training groups compared with the control group, and more so for the strength training group than the endurance training group. **Conclusion:** Strength and endurance training initiated with a 12-day institutional program followed by advice to exercise regularly at home were effective methods for decreasing pain and disability in women with chronic neck pain.

**Commentary**

Trials on “what works” in the field of physical rehabilitation are welcome among practitioners, especially when presenting such uplifting results as the present study of Ylinen and colleagues. The trial is elegantly designed and the authors have described the interventions comprehensively enough to be replicated in practice. Practitioners will know, of course, that they cannot expect equal success in their own practices, where a good proportion of the patients are afflicted with co-morbidity, motivation for work and rehabilitation vary extensively, and most of us would never make 98.3% of our patients stick to their exercise regime. (How did they do it?) However, the study shows that the exercise interventions as described in the report can work under circumstances equal to the trial, which is a necessary (though not sufficient) prerequisite for such interventions to actually work in a real world setting.

The interventions tested are too complex to be considered a pure comparison of isometric strength exercises, lighter endurance training and a control. Both intervention groups received potentially effective co-interventions by means of a multimodal rehabilitation program as well as actual physical therapy. Nevertheless, the trial results are both interesting and useful for practitioners in the field. It shows that a rehabilitation package including strength training plus a multimodal rehabilitation program plus four sessions of physical therapy can effectively reduce pain and disability for female patients with neck pain compared with a control group. A corresponding package including endurance training instead of strength exercises was also effective, though slightly less so. Contrary to the authors’ conclusions, however, the trial results do not constitute evidence on the superiority of these methods to aerobic/stretching exercises. A comparison of these training methods would have required yet another experimental group receiving an intervention comprising an aerobic/stretching exercise regime plus a rehabilitation package corresponding to the comparison groups. As it is, the control group is just a control group, and cannot be considered as a comparable experimental group receiving aerobic/stretching exercises under otherwise equal circumstances.

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