

## Effects of stretching exercise training and ergonomic modifications on musculoskeletal discomforts of office workers: a randomized controlled trial

### ABSTRACT

**Objective:** To evaluate the effectiveness of exercise, ergonomic modification, and a combination of training exercise and ergonomic modification on the scores of pain in office workers with neck, shoulders, and lower back pain. **Methods:** Participants ( $N = 142$ ) in this randomized controlled trial were office workers aged 20–50 years old with neck, shoulders, and lower back pain. They were randomly assigned to either the ergonomic modification group, the exercise group, the combined exercise and ergonomic modification group, or the control group (no-treatment). The exercise training group performed a series of stretching exercises, while the ergonomic group received some modification in the working place. Outcome measures were assessed by the Cornell [Musculoskeletal Disorders](#) Questionnaire at baseline, after 2, 4, and 6 months of intervention. **Results:** There was significant differences in pain scores for neck (MD  $-10.55$ ; 95%CI  $-14.36$  to  $-6.74$ ), right shoulder (MD  $-12.17$ ; 95%CI  $-16.87$  to  $-7.47$ ), left shoulder (MD  $-11.1$ ; 95%CI  $-15.1$  to  $-7.09$ ) and lower back (MD  $-7.8$ ; 95%CI  $-11.08$  to  $-4.53$ ) between the exercise and control groups. Also, significant differences were seen in pain scores for neck (MD  $-9.99$ ; 95%CI  $-13.63$  to  $-6.36$ ), right shoulder (MD  $-11.12$ ; 95%CI  $-15.59$  to  $-6.65$ ), left shoulder (MD  $-10.67$ ; 95%CI  $-14.49$  to  $-6.85$ ) and lower back (MD  $-6.87$ ; 95%CI  $-10$  to  $-3.74$ ) between the combined exercise and ergonomic modification and control groups. The significant improvement from month 4 to 6, was only seen in exercise group ( $p < 0.05$ ). **Conclusion:** To have a long term effective on MSDs, [physical therapists](#) and occupational therapists should use stretching exercises in their treatment programs rather than solely rely on ergonomic modification.

**Keyword:** Ergonomic modification; Musculoskeletal disorders; Physical therapy; Stretching exercise