

Effect of Stress on Cervical muscle activity

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1 Article

Shahidi et al. (2013) Differential effects of mental concentration and acute psychosocial stress on cervical muscle activity and posture¹

2 Article question

Does a psychological stressor affect cervical muscle activity and posture?

3 Study construct

- Population:
 - 60 healthy office workers
 - Higher proportion of women d/t a higher incidence of female office workers developing pain
 - No hx of neck pain in previous year

- Worked at least 30 h a week, 75% of workday at the computer
- Electromyography
- Muscles observed:
 - Upper trapezius
 - Cervical extensors
 - Sternocleidomastoid
- Seated posture
- Low stress (LS) condition + mental concentration
- High stress (HS) condition + mental concentration and psychosocial stress
- Constant variables:
 - Asked to do a Psychomotor task:
 - * operation span (OpSpan) test: complex arithmetic problems while memorizing and selecting lists of 2-8 words in sequential order using a computer mouse with their dominant arm.
- Intervention: Repeated under low and high stress conditions with a 15 min rest break
- Dependent variable:
 - Task performance scored 0-40, higher = better accuracy
 - Seated posture
 - Low stress (LS) condition + mental concentration
 - High stress (HS) condition + mental concentration and psychosocial stress

4 Statistical analysis

Demographic characteristics of participants in the experimental and control sessions were compared using independent [t-tests](#) for continuous variables and [chi-squared tests](#) for categorical variables¹.

Cervical angle, RPP, and STAI-State scores were analyzed using a one-way repeated measures analysis of variance (ANOVA) to compare baseline, LS, and HS conditions¹. Post hoc comparisons using Tukey's HSD procedure were performed for outcomes with significant main effects¹.

[Paired T-Tests](#) were used to compare the normalized activity of UT, CE, and SCM muscles across the two stress conditions¹.

Pearson's correlation coefficients were used to assess the association between change in muscle activity, cervical angle, and task duration between test conditions¹.

1. Shahidi B, Haight A, Maluf K. Differential effects of mental concentration and acute psychosocial stress on cervical muscle activity and posture. *Journal of Electromyography and Kinesiology: Official Journal of the International Society of Electrophysiological Kinesiology*. 2013;23(5):1082-1089. doi:[10.1016/j.jelekin.2013.05.009](https://doi.org/10.1016/j.jelekin.2013.05.009)