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 posture[1]

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 variables[1].

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 conditions[1]. Post hoc comparisons using Tukey's HSD procedure were performed for outcomes with significant main effects[1].

Paired T-Tests were used to compare the ormalized activity of UT, CE, and SCM muscles across the two stress conditions[1].

Pearson's correlation coefficients were used to assess the association between change in muscle activity, cervical angle, and task duration between test conditions[1].

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