

Exercise vs. Embodied Mindfulness for Chronic Neck Pain



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Background

- Neck Pain is the 4th leading cause of disability in the U.S.
- Contributing factors may include overuse of superficial neck muscles.
- Exercise is commonly prescribed, but studies show inconsistent results.¹



Objectives

- To determine if a mindful practice of reducing habitual muscle tension will be as effective as a targeted exercise program for reducing chronic neck pain, with benefits retained longer.
- To assess plausible mechanisms
 - Self-efficacy
 - Muscle coordination



Interventions

Exercise Program

- Based on clinically relevant physical therapy exercises
- Aimed to improve posture through neck and upper-back strengthening
- Included light-stretching, strength exercises, and neuromuscular re-education of the deep cervical flexors²



Embodied Mindfulness

- Based on Alexander technique
- Aimed to improve patterns of postural coordination through maintaining an intention of lengthening during everyday activities
- Included instruction in basic biomechanical and ergonomic principles, and observation and inhibition of excessive muscular co-contraction. *Does not specifically focus on neck.*



Outcome Measures

Self-Report

- Northwick Park Questionnaire (NPQ)
- Pain Self-Efficacy Questionnaire (PSEQ)

Electromyography

- Record surface neck muscle activity during
 - Accepted Voluntary Contraction (AVC)
 - Cranio-cervical Flexion Test (CCFT) at 5 levels of flexion
- High ratio of CCFT/AVC = overuse of superficial neck muscles.



Design

- 2-group, quasi-randomized study
- Experimenters blinded to group assignment
- Each intervention lasted 5 weeks (2 sessions / week)
- 3 testing sessions: pre-test, immediate post-test, 5-week retention

Participants

- 18 participants (9 per group) with chronic neck pain (at least 3 months), aged 32-83 (mean 52) began the study.
- All participants scored >8/50 on the Neck Disability Index and reported at least three months of neck pain.
- One subject in the EX group dropped out due to pain, and one subject in the MM group dropped out for unknown reason.

References

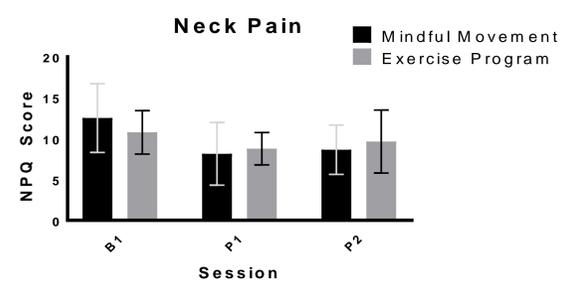
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Results

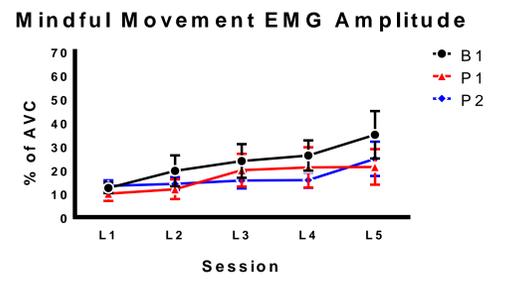
Neck Pain

- Main effect of time (p=.007)
- Immediately after intervention
 - NPQ score decreased 4.2 points in MM (p=.02) and 2.3 points in EX (p=.0007)
- 5 weeks later
 - MM maintained NPQ score 3.8 points lower than baseline (p=.05)
 - EX maintained NPQ score 1.9 points below baseline (p=.35)



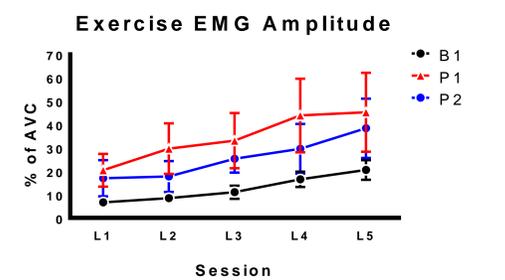
Self Efficacy

- The change in PSEQ score was not statistically significant in either group.



Electromyography

- Significant interaction (p=.005) between intervention and level, with a significant decrease in amplitude between B1 and P1 for MM (p=.02) but not EX (p=.14) at level 5 of the CCFT (most flexion).



Subjective impressions

- Participants in the Alexander group were more likely than participants in the exercise group to report that they had learned how their movements contributed to their neck pain (p=.02) and that they applied what they learned in class on a daily basis (p=.003).

Conclusions

- Mindful movement classes were as effective at reducing neck disability as an equivalent duration of exercise classes, with significantly better retention at 5 weeks.
- Subjects in the mindful movement classes showed significantly greater reduction in superficial neck muscle activation than subjects in the exercise classes during the most challenging trials of the neck flexion task.
- Subjects in the mindful movement group reported greater awareness of how their habits contributed to their pain and how they could apply the intervention to daily activities.

Acknowledgments

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