



## Assessment of cervical muscle strength in women with migraine stratified by the report of neck pain

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### Introduction

Individuals with migraine may have associated cervical musculoskeletal dysfunctions that may influence muscle function, but we still do not know if the alteration in muscle strength can predict the magnitude of this relationship or if the presence of pain during the tests can influence these results. Therefore, evaluating the muscle strength of migraine patients and the report of pain during the test can elucidate this relationship.

### Objective

To clarify the relationship between pain reporting and cervical maximum isometric voluntary contraction (MVIC) in migraine individuals with and without neck pain, neck pain and controls.

### Methods

We selected 100 women aged between 18 and 55 years, stratified into 4 groups: asymptomatic controls (n=25), neck pain (n=25), migraine (n=25), and migraine with neck pain (n=25). Patients were diagnosed by a neurologist according to the International Classification of Headache Disorders – III edition, whereas neck pain was included through self-report of chronic neck pain for at least 3 months (mild disability according to the Neck Disability Index). Clinical and demographic data were collected from the participants and they performed the Maximal isometric voluntary contractions (MIVC) test to verify cervical muscle strength for flexion and extension. The analyzes were performed following the division of the four groups by the ANOVA test using software version 9.4 (SAS Institute, Cary, NC, USA).

### Results

A higher proportion of participants with migraine and neck pain (44%) and neck pain alone (56%) reported flexion test-induced neck pain compared to the control group (0% p<0.01), and neck pain Test-induced headache was more commonly reported in those with migraine (28%) and migraine with neck pain (28%) vs controls (0% p<0.05). For extension, there was a higher report of neck pain for neck pain (36%) and migraine with neck pain (24%) groups compared to control (0% p<0.01). Likewise, higher rates of women with migraine (16%) and migraine with neck pain (20%) reported headaches during testing compared to controls (0% p<0.05).

### Conclusion

Women with a chronic neck pain, migraine, or both tend to report more head or neck pain compared to the control group during the Maximal isometric voluntary contractions test.

**Keywords:** Migraine, Neck pain, Muscle strength.