

# Identifying Risk Factors for First-Episode Neck Pain: A Systematic Review

Rebecca Kim, BS, Colin Wiest, BS, MBA, Kelly Clark, BS,  
 Chad Cook PT, PhD, MBA, FAAOMPT, Maggie Horn DPT, MPH, PhD

## Background

- Neck pain affects 15.1% of the United States population every 3 months.
- 1/3 of the population who experience neck pain will never be fully relieved of their symptoms.
- Currently there are few systematic reviews that have identified risk factors for neck pain; and to our knowledge, none that have discriminated whether the findings were modifiable.

## Purpose

- The primary purpose of this study was to **determine risk factors associated with the development of first episode neck pain from a pain-free baseline.**
- A secondary purpose was to determine whether the risk factors were modifiable or non-modifiable.

## Methods

### Risk Factors Defined

- Categorized as **physical, psychosocial, or individual level factors**
- Further categorized by the strength of their odds/risk/hazard ratio
  - Minor Risk Factor: 1.0 - 1.5
  - Moderate Risk Factor: 1.5 – 2.0
  - Major Risk Factor: 2+
  - Protective Risk Factor: < 1.0

### Highlighted Eligibility Criteria:

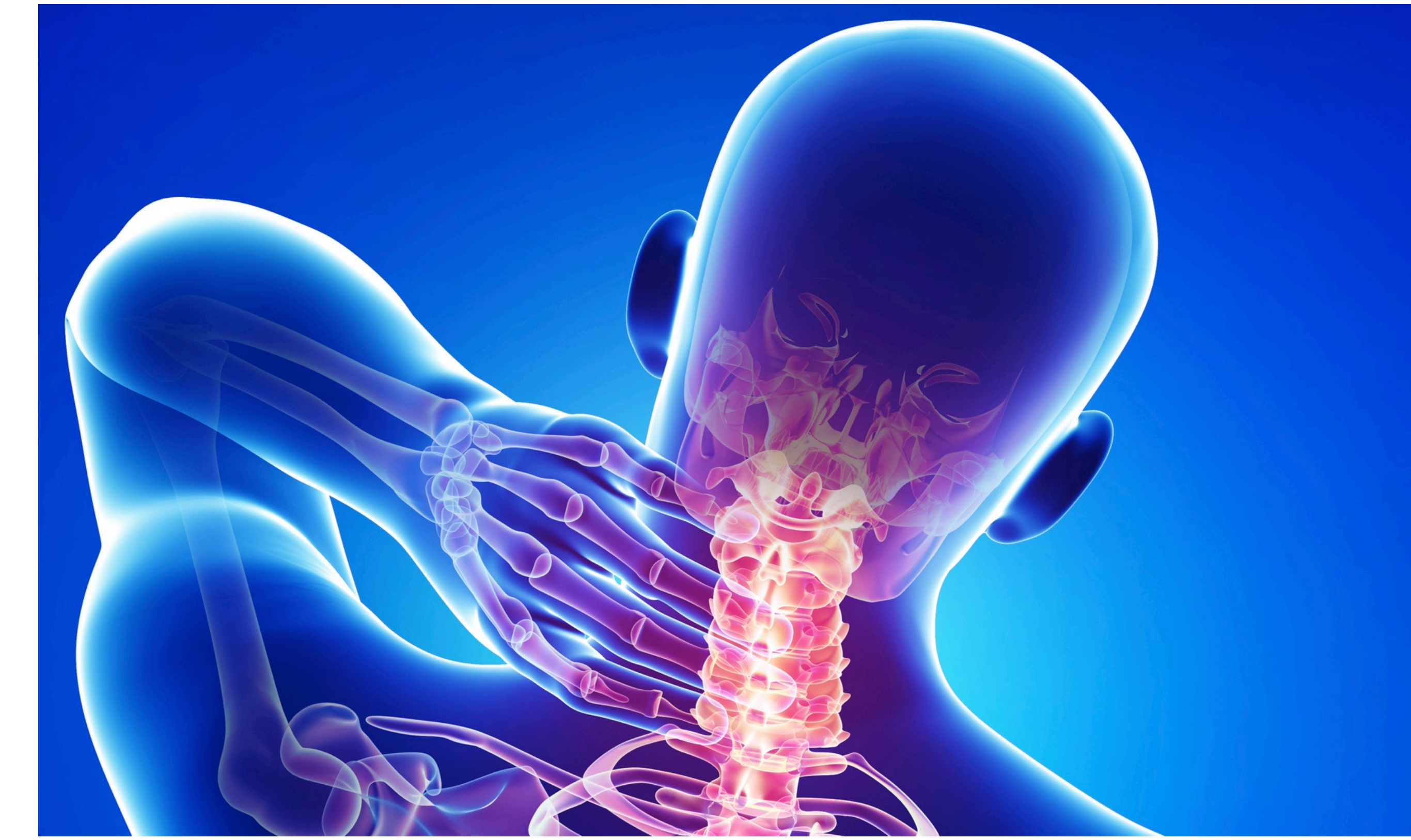
- Longitudinal, observational, cohort studies with at least a 1 year follow up
- Subjects were ≥ 18 years old in a **pain-free state** OR have **no history of neck pain**

### Exclusion Criteria:

- Articles that reported incidence rates for neck pain in combination with pain in other areas of the body

## Results

Physical	Psychosocial	Demographic
<b>Minor Risk Factors:</b> <ul style="list-style-type: none"> <li>• Low Pain Threshold</li> </ul>	<b>Minor Risk Factors:</b> <ul style="list-style-type: none"> <li>• Low Job Control</li> <li>• Medium Level of Distress</li> </ul>	<b>Minor Risk Factors:</b> <ul style="list-style-type: none"> <li>• Family Size of 3 Children</li> </ul>
<b>Moderate Risk Factors:</b> <ul style="list-style-type: none"> <li>• Previous Neck Injury</li> <li>• No Chair Adjustability</li> <li>• Work in Awkward Postures</li> </ul>	<b>Moderate Risk Factors:</b> <ul style="list-style-type: none"> <li>• High Job Demands</li> <li>• High Level of Stress</li> <li>• Low Back Pain</li> </ul>	<b>Moderate Risk Factors:</b> <ul style="list-style-type: none"> <li>• Widowed</li> <li>• Family Size of 4+ Children</li> <li>• Male &amp; Low Income</li> </ul>
<b>Major Risk Factors:</b> <ul style="list-style-type: none"> <li>• None</li> </ul>	<b>Major Risk Factors:</b> <ul style="list-style-type: none"> <li>• High Role Conflict</li> <li>• Depressed Mood</li> <li>• Perceived Muscular Tension</li> </ul>	<b>Major Risk Factors:</b> <ul style="list-style-type: none"> <li>• BMI ≥ 30</li> <li>• Low Income &amp; Perceived Economic Stress</li> </ul>
<b>Protective Risk Factors:</b> <ul style="list-style-type: none"> <li>• Leisure Physical Activity</li> <li>• Cervical Extensor Endurance</li> </ul>	<b>Protective Risk Factors:</b> <ul style="list-style-type: none"> <li>• Social Climate</li> <li>• Empowering Leadership</li> <li>• DNIC</li> </ul>	<b>Protective Risk Factors:</b> <ul style="list-style-type: none"> <li>• None</li> </ul>



## Clinical Relevance

- Identify risk factors to encourage prevention and early diagnosis
- Many of the risk factors found are *modifiable*
- Risk factors for a pain-free baseline appear to differ from those that are not at a pain-free baseline.

## Conclusions

- Psychosocial risk factors had the largest effects for neck pain
- The majority of identified risk factors are modifiable
- The results of this review support the importance of screenings, psychological outcome measures, and employee education sessions
- Considering the burden of neck pain, this information has the potential to make a societal impact

## Acknowledgements / References

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<sup>1</sup>Hogg-Johnson S, van der Velde G, Carroll LJ, et al. The burden and determinants of neck pain in the general population: results of the Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders. *J Manipulative Physiol Ther.* 2009;32(2 Suppl):S46-60  
<sup>2</sup>Côté, P., Cassidy, J. D., Carroll, L. J., & Kristman, V. (2004). The annual incidence and course of neck pain in the general population: a population-based cohort study. *Pain (03043959), 112(3), 267-273* 267p. doi:10.1016/j.pain.2004.09.004