

SUPPLEMENTARY MATERIAL

An Overview of Systematic Reviews on Prognostic Factors in Neck Pain: Results from the International Collaboration on Neck Pain (ICON) Project

David M. Walton¹, Linda J. Carroll², Helge Kasch³, Michele Sterling⁴, Arianne P. Verhagen⁵, Joy C. MacDermid⁶, Anita Gross⁶, P. Lina Santaguída⁶, Lisa Carlesso⁷ and ICON⁸

¹Faculty of Health Sciences, The University of Western Ontario, London Ontario, Canada

²Department of Public Health Sciences and Alberta Centre for Injury Control Research, School of Public Health, University of Alberta, Edmonton Alberta, Canada

³The Danish Pain Research Center, Department of Neurology, Aarhus University Hospital, Denmark

⁴Centre for National Research on Disability and Rehabilitation Medicine (CONROD), The University of Queensland, Brisbane Australia

⁵Department of General Practice, Erasmus Medical Centre University, Rotterdam, The Netherlands

⁶School of Rehabilitation Science, McMaster University, Hamilton Ontario, Canada

⁷Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton Ontario, Canada

⁸International Collaboration on Neck (ICON)

Supplementary Tables s1: Whiplash injury

Confidence in conclusions (that an association exists) are presented in both text and graphical format, using the following legend: ⊗⊗⊗⊗ = High confidence, ⊗⊗⊗ = Moderate confidence, ⊗⊗ = Low confidence, ⊗ = very low confidence

Table s1a. Parameters of the Accident

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Impact direction: rear	Walton (2012) Kamper (2008) Carroll (2008) Scholten-Peeters (2003)	Medium High Medium Medium	Strong evidence of no association Strong evidence of no association Strong evidence of no association Strong evidence of no association	⊗⊗⊗⊗ High	No effect
Impact direction: front	Walton (2009) Carroll (2008)	Medium Medium	Strong evidence of no association Strong evidence of no association	⊗⊗ Low	No effect
Impact direction: side	Walton (2009) Carroll (2008)	Medium Medium	Strong evidence of no association Strong evidence of no association	⊗⊗ Low	No effect
Seating position: front passenger	Walton (2009) Carroll (2008)	Medium Medium	Strong evidence of no association Strong evidence of no association	⊗⊗ Low	No effect
Seating position: driver	Walton (2009) Kamper (2008) Carroll (2008)	Medium High Medium	Strong evidence of no association Strong evidence of no association Strong evidence of no association	⊗⊗⊗⊗ High	No effect
Vehicle stationary when hit	Walton (2009) Kamper (2008) Scholten-Peeters (2003)	Medium High Medium	Strong evidence of no association Moderate evidence of no association Inconclusive	⊗⊗⊗ Moderate	No effect
Aware of impending collision	Walton (2009) Kamper (2008) Carroll (2008) Scholten-Peeters (2003)	Medium High Medium Medium	Strong evidence of no association Strong evidence of no association Strong evidence of no association Inconclusive	⊗⊗⊗⊗ High	No effect

(Table s1a.) contd.....

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Head rest in place	Walton (2009) Kamper (2008) Carroll (2008)	Medium High Medium	Strong evidence of no association Strong evidence of no association Strong evidence of no association	⊗⊗⊗⊗ High	No effect
Head rotated at impact	Kamper (2008) Carroll (2008) Scholten-Peeters (2003) McClune (2002)	High Medium Medium Low	Inconclusive Limited evidence of no association Inconclusive <i>Consistent evidence of sig. Association</i>	⊗ Very low	No effect
No seat belt in use	Walton (2009) Kamper (2008) Carroll (2008)	Medium High Medium	<i>Moderate evidence of sig. Association</i> Moderate evidence of no association Strong evidence of no association	⊗ Very low	No effect
High speed of vehicles	Kamper (2008) Carroll (2008)	High Medium	Strong evidence of no association <i>Limited evidence of sig. association</i>	⊗⊗ Low	No effect
Accident occurred on a highway	Scholten-Peeters (2003)	Medium	<i>Limited evidence of sig. association</i>	⊗⊗ Low	Inconclusive
Velocity change > 10km/h (self-reported)	Carroll (2008) Scholten-Peeters (2003)	Medium Medium	Strong evidence of no association Inconclusive	⊗⊗ Low	No effect
Velocity change (crash recorder)	Carroll (2008)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
'Severe' collision (self-report)	Walton (2012)	Medium	Strong evidence of no association	⊗⊗ Low	No effect

Table s1b. Psychological and Behavioral Factors

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Anxiety at inception	Williamson (2008) Carroll (2008)	Medium Medium	Inconclusive <i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Depression at inception	Walton (2009) Williamson (2008) Carroll (2008)	Medium Medium Medium	Inconclusive Inconclusive Limited evidence of sig. association	⊗ Very low	Risk
General psychological distress at inception	Kamper (2008) Williamson (2008) Scholten-Peeters (2003)	High Medium Medium	<i>Strong evidence of sig. association</i> Moderate evidence of no association Strong evidence of no association	⊗ Very low	Risk
Post-traumatic stress symptoms at inception	Kamper (2008) Williamson (2008)	High Medium	<i>Strong evidence of sig. association</i> <i>Limited evidence of sig. association</i>	⊗⊗⊗ Moderate	Risk
Perceived threat/helplessness	Williamson (2008) Carroll (2008)	Medium Medium	Inconclusive <i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Cognitive function	Williamson (2008) Scholten-Peeters (2003)	Medium Medium	Inconclusive Inconclusive	⊗⊗ Low	Inconclusive
Personality traits (e.g. Neuroticism, Nervousness)	Kamper (2008) Williamson (2008) Scholten-Peeters (2003)	High Medium Medium	Strong evidence of no association Moderate evidence of no association <i>Limited evidence of sig. association*</i>	⊗⊗ Low	No effect
Catastrophizing	Walton (2009) Kamper (2008) Carroll (2008) Williamson (2008)	Medium High Medium Medium	<i>Moderate evidence of sig. association</i> <i>Strong evidence of sig. association</i> <i>Limited evidence of sig. association</i> Inconclusive	⊗⊗⊗ Moderate	Risk

(Table s1b.) contd.....

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Coping strategies	Kamper (2008) Carroll (2008) Williamson (2008)	High Medium Medium	<i>Strong evidence of sig. association</i> Inconclusive† Inconclusive	⊗⊗ Low	Risk
Fear-avoidance	Kamper (2008) Carroll (2008) Williamson (2008)	High Medium Medium	Inconclusive <i>Limited evidence of sig. association</i> Inconclusive	⊗⊗ Low	Inconclusive
General stress unrelated to accident	Kamper (2008) Williamson (2008) Scholten-Peeters (2003)	High Medium Medium	Inconclusive Inconclusive Inconclusive	⊗⊗⊗⊗ High	Inconclusive
Blame & Anger	Williamson (2008)	Medium	Inconclusive	⊗ Very low	Inconclusive
Social function	Kamper (2008)	High	Inconclusive	⊗⊗ Low	Inconclusive
Self-Efficacy	Williamson (2008)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Life Control	Williamson (2008)	Medium	Limited evidence of no association	⊗ Very low	No effect
Insomnia	Kamper (2008)	High	<i>Strong evidence of sig. association</i>	⊗⊗ Low	Risk
Irritability	Williamson (2008)	Medium	Inconclusive	⊗ Very low	Inconclusive
Familiarity with symptoms of whiplash	Williamson (2008)	Medium	Inconclusive	⊗ Very low	Inconclusive
Somatisation	Williamson (2008)	Medium	Inconclusive	⊗ Very low	Inconclusive
Well-being	Williamson (2008)	Medium	Limited evidence of no association	⊗ Very low	No effect
Expectation, amplification and attribution	McClune (2002)	Low	<i>Balanced evidence of sig. association</i>	⊗ Very low	Risk

*: Scholten-Peeters evaluated evidence of the personality traits of neuroticism (inconclusive) and nervousness (limited evidence of significant effect). The latter was included in the table, neither result would change the strength or direction of the recommendation.

†: See text for details of time-dependent influence of coping strategies.

Table s1c. Self-Reported Symptoms or Interference at Inception

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
High pain intensity	Walton (2009) Kamper (2008) Carroll (2008) Williams (2007) Scholten-Peeters (2003)	Medium High Medium Medium Medium	<i>Strong evidence of sig. association</i> <i>Strong evidence of sig. association</i> <i>Consistent evidence of sig. association</i> <i>Moderate evidence of sig. association</i> <i>Strong evidence of sig. association*</i>	⊗⊗⊗⊗ High	Risk
High number of different symptoms	Kamper (2008) Carroll (2008) Williams (2007) Scholten-Peeters (2003)	High Medium Medium Medium	Inconclusive <i>Strong evidence of sig. association</i> Inconclusive <i>Limited evidence of sig. association</i>	⊗ Very low	Risk

(Table s1c.) contd.....

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
High neck-related disability	Walton (2012) Kamper (2008) Carroll (2008) Williams (2007)	Medium High Medium Medium	<i>Strong evidence of sig. association</i> <i>Strong evidence of sig. association</i> <i>Strong evidence of sig. association</i> <i>Moderate evidence of sig. association</i>	⊗⊗⊗⊗ High	Risk
Shoulder or upper extremity pain	Kamper (2008) Williams (2007)	High Medium	Strong evidence of no effect Inconclusive	⊗⊗ Low	No effect
WAD grade	Walton (2009) Kamper (2008) Carroll (2008) Williams (2007) Scholten-Peeters (2003)	Medium High Medium Medium Medium	<i>Moderate evidence of sig. association</i> † Inconclusive <i>Strong evidence of sig. association</i> Inconclusive Inconclusive	⊗⊗ Low	Risk
Presence of any headache	Walton (2009) Kamper (2008)	Medium High	<i>Strong evidence of sig. association</i> Limited evidence of no association	⊗ Very low	Risk
High intensity headache	Carroll (2008) Williams (2007)	Medium Medium	<i>Strong evidence of sig association</i> Inconclusive	⊗⊗ Low	Risk
Back pain	Walton (2012) Kamper (2008) Williams (2007)	Medium High Medium	<i>Limited evidence of sig. association</i> Inconclusive Inconclusive	⊗ Very low	Risk
Radicular/peripheral neurological symptoms‡	Walton (2009) Kamper (2008) Carroll (2008) Williams (2007) Scholten-Peeters (2003)	Medium High Medium Medium Medium	Inconclusive <i>Moderate evidence of sig. association</i> <i>Moderate evidence of sig association</i> Inconclusive Inconclusive	⊗⊗ Low	Risk
Early onset of symptoms after accident	Williams (2007) Scholten-Peeters (2003)	Medium Medium	Inconclusive Inconclusive	⊗⊗⊗ Moderate	Inconclusive
Disturbed sleep	Walton (2009) Scholten-Peeters (2003)	Medium Medium	Inconclusive Inconclusive	⊗⊗⊗ Moderate	Inconclusive
Dizziness	Kamper (2008) Williams (2007)	High Medium	Moderate evidence of no association Inconclusive	⊗ Very low	No effect
Blurred vision	Kamper (2008) Williams (2007)	High Medium	Inconclusive Inconclusive	⊗⊗⊗⊗ High	Inconclusive
Fatigue	Williams (2007)	Medium	Inconclusive	⊗ Very low	Inconclusive
Sensitivity to noise or light	Williams (2007)	Medium	Inconclusive	⊗ Very low	Inconclusive
Auditory disturbance	Kamper (2008)	High	Moderate evidence of no association	⊗⊗ Low	No effect
Quality of life	Kamper (2008)	High	<i>Strong evidence of sig. association</i>	⊗⊗ Low	Risk
Difficulty swallowing	Williams (2007)	Medium	Inconclusive	⊗ Very low	Inconclusive
Feeling of neck stiffness	Kamper (2008)	High	Moderate evidence of no effect	⊗⊗ Low	No effect

*: Scholten-Peeters and colleagues were the only authors to separate the effects of pain intensity when for the outcomes of pain (strong evidence) and disability (limited evidence). All other authors combined outcomes.

†: Walton and colleagues performed several comparisons of WAD grade, including grades 2 or 3 against 0 or 1, and grade 3 against grade 2, for each of 3 follow-up durations (6 months, 12-16 months, 24 months). The results ranged from strong evidence in support of sig. association, through moderate evidence to inconclusive. The results presented in the table represent the overall mean finding of moderate evidence.

‡: Carroll and colleagues considered radicular symptoms within the context of WAD grade, where WAD III requires the presence of radicular symptoms. This result is included for radicular symptoms and for WAD grade.

Table s1d. Biological and/or Clinical Assessment

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Restricted cervical range of motion	Walton (2009) Kamper (2008) Carroll (2008) Williams (2007) Scholten-Peeters (2003)	Medium High Medium Medium Medium	Inconclusive Inconclusive Inconclusive* Inconclusive Inconclusive†	⊗⊗⊗⊗ High	Inconclusive
Cold hypersensitivity/hyperalgesia	Kamper (2008) Williams (2007)	High Medium	<i>Moderate evidence of sig. association</i> <i>Moderate evidence of sig. association</i>	⊗⊗⊗ Moderate	Risk
Mechanical hyperalgesia	Carroll (2008) Williams (2007)	Medium Medium	<i>Limited evidence of sig. association</i> Limited evidence of no association	⊗ Very low	Inconclusive
Reduced superficial neck muscle recruitment/ altered muscle recruitment patterns (EMG)	Kamper (2008) Carroll (2008) Williams (2007)	High Medium Medium	<i>Moderate evidence of sig. association</i> Limited evidence of sig association Inconclusive	⊗⊗ Low	Risk
Abnormalities on diagnostic imaging (MRI, X-ray)	Kamper (2008) Carroll (2008) Williams (2007) Scholten-Peeters (2003)	High Medium Medium Medium	Inconclusive Limited evidence of no association Inconclusive Inconclusive	⊗⊗⊗ Moderate	Inconclusive
Angular deformity of the neck (scoliosis, flattened cervical lordosis)	Kamper (2008) Scholten-Peeters (2003)	High Medium	Strong evidence of no association Strong evidence of no association	⊗⊗⊗⊗ High	No effect
Anthropometrics: Height	Kamper (2008) Williams (2007)	High Medium	Moderate evidence of no association Inconclusive	⊗⊗ Low	No effect
Anthropometrics: Body Mass Index	Walton (2009) Kamper (2008) Williams (2007)	Medium High Medium	Inconclusive Inconclusive Inconclusive	⊗⊗⊗⊗ High	Inconclusive
Joint Position Error	Kamper (2008)	High	Inconclusive	⊗⊗ Low	Inconclusive
Motor-evoked potentials	Williams (2007)	Medium	Inconclusive	⊗ Very low	Inconclusive
Cranial nerve or brainstem disturbance	Williams (2007)	Medium	Inconclusive	⊗ Very low	Inconclusive
Muscle spasm	Williams (2007)	Medium	Inconclusive	⊗ Very low	Inconclusive
Low workload in cervical muscles	Scholten-Peeters (2003)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk

*: Carroll and colleagues synthesized the literature regarding restricted range of motion within the context of WAD grade II, which by definition requires restricted range of motion.

†: Scholten-Peeters and colleagues were the only authors to perform separate syntheses of restricted range of motion as a predictor of symptoms (inconclusive) or disability (limited evidence of significant association). All other groups combined outcomes.

Table s1e Medicolegal Context

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Compensation system (tort vs no fault)	Carroll (2008)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Receiving compensation	Scholten-Peeters (2003)	Medium	Strong evidence of no association	⊗⊗ Low	No effect
Lawyer involvement	Carroll (2008) McClune (2002)	Medium Medium	<i>Moderate evidence of sig. association</i> <i>Consistent evidence of sig. association</i>	⊗⊗ Low	Risk

Table s1f. Other Social Influences

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Type of work*	Scholten-Peeters (2003)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Psychosocial work factors (undefined)	Williamson (2008)	Medium	Limited evidence of no association	⊗ Very low	No effect
Social support	Williamson (2008)	Medium	Limited evidence of no association	⊗ Very low	No effect

*: Scholten-Peeters and colleagues referred specifically to driving occupations'.

Table s1g. Demographics

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Female	Walton (2012) Kamper (2008) Carroll (2008) Scholten-Peeters (2003)	Medium High Medium Medium	<i>Moderate evidence of sig. association</i> Strong evidence of no association Inconclusive Strong evidence of no association	⊗ Very low	Inconclusive
Older age*	Walton (2009) Kamper (2008) Carroll (2008) Scholten-Peeters (2003)	Medium High Medium Medium	Moderate evidence of no association† Strong evidence of no association Inconclusive Strong evidence of no association	⊗⊗⊗ Moderate	No effect
Lower education‡	Walton (2012) Kamper (2008) Carroll (2008)	Medium High Medium	<i>Strong evidence of sig. association</i> Inconclusive Inconclusive	⊗ Very low	Risk

*: Walton and colleagues defined 'older' age as age greater than 50 years. Older age was not defined in the other reviews.

†: Walton and colleagues stratified the effect of older age, defined as age over 50, by outcome. For symptom-based outcomes, they found near-significant evidence of an association. For disability-based outcomes, they found strong evidence for no effect. The moderate evidence of no effect is the combined level considering these two outcomes.

‡: Walton and colleagues defined 'lower' education as education less than post-secondary. Lower education was not defined in the other reviews.

Table s1h. Treatment-Related Factors

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Consulting a general physician, chiropractor or physiotherapist in the acute stage	Carroll (2008)	Medium	<i>Limited evidence of sig. Association</i>	⊗⊗ Low	Risk
Frequent medical or rehabilitation visits	Carroll (2008)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Initial treatment received in hospital	Scholten-Peeters (2003)	Medium	Inconclusive	⊗ Very low	Inconclusive
Need for a cervical collar >12 weeks post-injury	Scholten-Peeters (2003)	Medium	Inconclusive	⊗ Very low	Inconclusive
Attendance at community-based rehabilitation clinics	Carroll (2008)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Early return to pre-accident activities	McClune (2002)	Low	<i>Consistent evidence of sig. association</i>	⊗ Very low	Risk
Need to resume physiotherapy after initial treatment	Scholten-Peeters (2003)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Over-medicalization (not defined)	McClune (2002)	Low	<i>Balanced evidence of sig. association</i>	⊗ Very low	Risk

Table s1i. Pre-Injury History

Predictor	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Pre-injury neck pain (self-report)	Walton (2012) Kamper (2008) Carroll (2008) Williams (2007)	Medium High Medium Medium	<i>Limited evidence of sig. association</i> Inconclusive <i>Moderate evidence of sig. association</i> Inconclusive	⊗⊗ Low	Risk
Pre-injury headache (self-report)	Walton (2012) Carroll (2008) Williams (2007) Scholten-Peeters (2003)	Medium Medium Medium Medium	Limited evidence of no association <i>Limited evidence of sig. association</i> Inconclusive Inconclusive	⊗ Very low	Inconclusive
Pre-existing findings (e.g. degeneration) on diagnostic imaging	Williams (2007) Scholten-Peeters (2003) McClune (2002)	Medium Medium Low	Inconclusive Inconclusive <i>Balanced evidence of sig. association</i>	⊗⊗ Low	Inconclusive
Pre-injury mental health problems	Carroll (2008) Williamson (2008) Scholten-Peeters (2003)	Medium Medium Medium	<i>Limited evidence of sig. association</i> Inconclusive <i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Pre-injury back pain	Williams (2007)	Medium	Inconclusive	⊗ Very low	Inconclusive
Pre-injury widespread pain	Williams (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk

Supplementary Tables 2: Other Neck problems

Confidence in conclusions (that an association exists) are presented in both text and graphical format, using the following legend: ⊗⊗⊗⊗ = High confidence, ⊗⊗⊗ = Moderate confidence, ⊗⊗ = Low confidence, ⊗ = very low confidence

Table s2a. Psychological or Behavioural Factors

Predictor	Population	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Psychological distress	Work-related neck pain	Carroll (2008)	Medium	Strong evidence of no association	⊗⊗ Low	No effect
Pessimism	Non-specific neck pain	Carroll (2009)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Higher need to be social	Non-specific neck pain	Carroll (2009)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
High levels of worry	Non-specific neck pain	McLean (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Passive coping strategies	Non-specific neck pain	Carroll (2009)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Anger or frustration	Non-specific neck pain	Carroll (2009)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk

Table s2b. Self-Reported Symptoms or Interference at Inception

Predictor	Population	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Duration of current episode	Non-specific neck pain	McLean (2007)	Medium	<i>Moderate evidence of sig. association*</i>	⊗ Low	Risk
Stable neck pain over past 2 weeks	Non-specific neck pain	McLean (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
High intensity neck symptoms	Non-specific neck pain	McLean (2007)	Medium	Inconclusive	⊗ Very low	Inconclusive
Poor neck function	Non-specific neck pain	McLean (2007)	Medium	Inconclusive†	⊗ Very low	Inconclusive
Both shoulders affected	Non-specific neck pain	McLean (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Numbness in hands or fingers	Non-specific neck pain	McLean (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Vitality	Non-specific neck pain	Carroll (2009) McLean (2007)	Medium Medium	<i>Limited evidence of sig. association</i> <i>Limited evidence of sig. association</i>	⊗ Low	Risk
Tendency to massage hands	Non-specific neck pain	McLean (2007)	Medium	Limited evidence of no association	⊗ Very low	No effect

*: McLean and colleagues synthesized the data on duration of current episodes by outcome: recovery (limited evidence of sig. association), symptoms (moderate evidence of sig. association), disability (moderate evidence of sig. association). The indicator of *moderate* evidence in the table is the best indicator of overall association with all 3 types of outcome.

†: McLean and colleagues synthesized the data on poor neck function by outcome: recovery (limited evidence of sig. association) and disability (inconclusive). The indicator of *inconclusive* in the table is the best indicator of overall association with the 2 types of outcome.

Table s2c. Medicolegal Context

Predictor	Population	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Compensation factors	NPAD* Post-Sx military†	Cassidy (2008) Carroll (2008)	Low Medium	<i>Limited evidence of sig. association</i> Limited evidence of no association	⊗ Very low	Inconclusive
Receiving funding for specialized rehab	NPAD	Cassidy (2008)	Medium	Limited evidence of no effect	⊗ Very low	No effect

*: NPAD = Neck pain and associated disorders.

†: Post-disc surgery in military personnel.

Table s2d. Other Social Factors

Predictor	Population	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Job demands	Post-Sx military* Work-related neck pain Non-specific neck pain	Carroll (2008) Carroll (2008) McLean (2007)	Medium Medium Medium	<i>Limited evidence of sig. association</i> Strong evidence of no association <i>Limited evidence of sig. association</i> †	⊗ Very low	Inconclusive
Little influence on own work situation	Non-specific neck pain	McLean (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Unemployed	Non-specific neck pain Non-specific neck pain	Carroll (2009) McLean (2007)	Medium Medium	<i>Limited evidence of sig. association</i> <i>Limited evidence of sig. association</i>	⊗ Low	Risk
Low social support	Non-specific neck pain Non-specific neck pain	Carroll (2009) Campbell (2011)	Medium Medium	<i>Limited evidence of sig. association</i> Inconclusive‡	⊗ Very low	Inconclusive
Remaining in same job	Work-related neck pain	Carroll (2008)	Medium	<i>Moderate evidence of sig. association</i>	⊗ Low	Risk
Sedentary outside of work	Work-related neck pain	Carroll (2008)	Medium	<i>Moderate evidence of sig. association</i>	⊗ Low	Risk

*: Post-disc surgery in military personnel

†: McLean and colleagues evaluated a series of job demands-related factors, including: machine operator (vs office work), carpentry (vs office work), repetitive job demands, and high job demands. The synthesized outcome was consistent across all predictors: Limited evidence of significant association. These have been pooled into one 'job demands' factor for the purposes of entry into the table.

‡: Campbell and colleagues described the results by type of support and outcome. 1 of 1 medium-quality studies found that higher emotional support reduced subsequent neck pain but had no effect on neck disability. The same study found that higher instrumental support (asking for help) reduced subsequent disability but not neck pain. Carroll and colleagues made no such distinction from the same single study, rather reporting the overall effect as 'limited' evidence of an association.

Table s2e. Demographics

Predictor	Population	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Female	Work-related neck pain Non-specific neck pain Non-specific neck pain	Carroll (2008) Carroll (2009) McLean (2007)	Medium Medium Medium	Inconclusive Inconclusive <i>Limited evidence of sig. association</i>	⊗ Very low	Inconclusive
Older age	Work-related neck pain	Carroll (2008)	Medium	Strong evidence of no association	⊗⊗ Low	No effect
Older age	Non-specific neck pain Non-specific neck pain	Carroll (2009) McLean (2007)	Medium Medium	<i>Strong evidence of sig. association</i> <i>Moderate evidence of sig. association*</i>	⊗⊗⊗⊗ High	Risk

*: McLean and colleagues synthesized the effect of older age across 3 different types of outcome: recovery (limited evidence of significant association), disability (moderate evidence of significant association) and symptoms (strong evidence of significant association). The indicator of *moderate* in the table is the best indicator of the overall association with the 3 types of outcome.

Table s2f. Treatment-Related Factors

Predictor	Population	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Type and intensity of clinical care	NPAD*	Cassidy (2008)	Low	<i>Moderate evidence of sig. association</i>	⊗ Very low	Risk

*: NPAD = Neck pain and associated disorders.

Table s2g. Pre-Injury History

Predictor	Population	Primary Author (Year)	Quality of Review	Summary of Findings (from Review)	Confidence in Conclusions	Risk/No Effect
Neck pain prior to current episode	Non-specific neck pain Non-specific neck pain	Carroll (2009) McLean (2007)	Medium Medium	<i>Limited evidence of sig. association</i> <i>Limited evidence of sig. association</i>	⊗⊗ Low	Risk
History of neck trauma	Non-specific neck pain Non-specific neck pain	Carroll (2009) McLean (2007)	Medium Medium	<i>Limited evidence of sig. association</i> <i>Limited evidence of sig. association*</i>	⊗⊗ Low	Risk
Headaches in the prior year	Non-specific neck pain	McLean (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Pre-existing low back pain	Non-specific neck pain	Carroll (2009)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
History of shoulder problems	Non-specific neck pain	McLean (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
History of other MSK disorders	Work-related neck pain Non-specific neck pain	Carroll (2008) McLean (2007)	Medium Medium	<i>Moderate evidence of sig. association</i> <i>Strong evidence of sig. association</i>	⊗⊗⊗ Moderate	Risk
General health (self-reported)	Non-specific neck pain Non-specific neck pain	Carroll (2009) McLean (2007)	Medium Medium	<i>Limited evidence of sig. association</i> <i>Limited evidence of no association</i>	⊗ Very low	Inconclusive
Low QoL (self-reported)	Non-specific neck pain	McLean (2007)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Regular cycling prior to episode	Non-specific neck pain Non-specific neck pain	Carroll (2009) McLean (2007)	Medium Medium	<i>Limited evidence of sig. association</i> <i>Limited evidence of sig. association</i>	⊗ Very low	Risk
Regular physical activity	Non-specific neck pain Non-specific neck pain	Carroll (2009) McLean (2007)	Medium Medium	Moderate evidence of no association <i>Strong evidence of sig. association</i>	⊗⊗ Low	Protective
Prior sick leave	Work-related neck pain	Carroll (2008)	Medium	<i>Moderate evidence of sig. association</i>	⊗⊗ Low	Risk
Treatment prior to current surgery	Post-Sx military†	Carroll (2008)	Medium	<i>Limited evidence of sig. association</i>	⊗ Very low	Risk

*: McLean and colleagues stratified the findings on history of neck trauma by 3 types of outcome: Symptoms (moderate evidence of significant association), recovery (limited evidence of significant association) and disability (limited evidence of significant association). The indicator of *limited* in the table represents the best overall association with the 3 types of outcome.

†: Post-disc surgery in military personnel