**SUPPLEMENTARY MATERIAL**

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

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Supplementary Tables s1: Whiplash injury

Confidence in conclusions (that an association exists) are presented in both text and graphical format, using the following legend: \(\begin{array}{c} \begin{array}{c} \text{High confidence,} \\
\text{Moderate confidence,} \\
\text{Low confidence,} \\
\text{very low confidence} \end{array} \end{array}\)

| 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 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 | Strong evidence of no association Strong evidence of no association Strong evidence of no association Inconclusive | High                      | No effect       |
### Table s1a. Physical Factors

| Predictor                        | Primary Author (Year) | Quality of Review | Summary of Findings (from Review)                          | Confidence in Conclusions | Risk/No Effect |
|----------------------------------|-----------------------|-------------------|------------------------------------------------------------|---------------------------|---------------|
| Head rest in place               | Walton (2009)         | Medium            | Strong evidence of no association                          | ☽ ☽ ☽ ☽ High              | No effect     |
|                                  | Kamper (2008)         | High              | Strong evidence of no association                          |                           |               |
|                                  | Carroll (2008)        | Medium            | Strong evidence of no association                          |                           |               |
| Head rotated at impact           | Kamper (2008)         | High              | Inconclusive                                              | ☽ Very low                | No effect     |
|                                  | Carroll (2008)        | Medium            | Limited evidence of no association                         |                           |               |
|                                  | Scholten-Peeters (2003) | Medium        | Inconclusive                                              |                           |               |
|                                  | McClune (2002)        | Low               | Consistent evidence of sig. Association                   |                           |               |
| No seat belt in use              | Walton (2009)         | Medium            | Moderate evidence of sig. Association                      | ☽ Very low                | No effect     |
|                                  | Kamper (2008)         | High              | Moderate evidence of no association                         |                           |               |
|                                  | Carroll (2008)        | Medium            | Strong evidence of no association                          |                           |               |
| High speed of vehicles           | Kamper (2008)         | High              | Strong evidence of no association                          | ☽ ☽ Low                   | No effect     |
|                                  | Carroll (2008)        | Medium            | Limited evidence of sig. association                       |                           |               |
| Accident occurred on a highway   | Scholten-Peeters (2003) | Medium        | Limited evidence of sig. association                       | ☽ Low                     | Inconclusive  |
| Velocity change > 10km/h (self-reported) | Carroll (2008) | Medium            | Strong evidence of no association                          | ☽ ☽ Low                   | No effect     |
|                                  | Scholten-Peeters (2003) | Medium        | Inconclusive                                              |                           |               |
| Velocity change (crash recorder) | Carroll (2008)        | Medium            | Limited evidence of sig. association                       | ☽ 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)     | Medium            | Inconclusive                                              | ☽ Very low                | Risk          |
|                                                | Carroll (2008)        | Medium            | Limited evidence of sig. association                       |                           |               |
| Depression at inception                        | Walton (2009)         | Medium            | Inconclusive                                              | ☽ Very low                | Risk          |
|                                                | Williamson (2008)     | Medium            | Inconclusive                                              |                           |               |
|                                                | Carroll (2008)        | Medium            | Limited evidence of sig. association                       |                           |               |
| General psychological distress at inception    | Kamper (2008)         | High              | Strong evidence of sig. association                        | ☽ Very low                | Risk          |
|                                                | Williamson (2008)     | Medium            | Moderate evidence of no association                        |                           |               |
|                                                | Scholten-Peeters (2003) | Medium        | Strong evidence of no association                          |                           |               |
| Post-traumatic stress symptoms at inception    | Kamper (2008)         | High              | Strong evidence of sig. association                        | ☽ ☽ Moderate              | Risk          |
|                                                | Williamson (2008)     | Medium            | Limited evidence of sig. association                       |                           |               |
| Perceived threat/helplessness                  | Williamson (2008)     | Medium            | Inconclusive                                              | ☽ Very low                | Risk          |
|                                                | Carroll (2008)        | Medium            | Limited evidence of sig. association                       |                           |               |
| Cognitive function                             | Williamson (2008)     | Medium            | Inconclusive                                              | ☽ Low                     | Inconclusive  |
|                                                | Scholten-Peeters (2003) | Medium        | Inconclusive                                              |                           |               |
| Personality traits (e.g. Neuroticism, Nervousness) | Kamper (2008)         | High              | Strong evidence of no association                          | ☽ ☽ Low                   | No effect     |
|                                                | Williamson (2008)     | Medium            | Moderate evidence of no association                        |                           |               |
|                                                | Scholten-Peeters (2003) | Medium        | Limited evidence of sig. association*                      |                           |               |
| Catastrophizing                                | Walton (2009)         | Medium            | Moderate evidence of sig. association                      | ☽ ☽ Moderate              | Risk          |
|                                                | Kamper (2008)         | High              | Strong evidence of sig. association                        |                           |               |
|                                                | Carroll (2008)        | Medium            | Limited evidence of sig. association                       |                           |               |
|                                                | Williamson (2008)     | Medium            | Inconclusive                                              |                           |               |
### 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) | High | Strong evidence of sig. association | ⊗⊗ | Low | Risk |
| | Carroll (2008) | Medium | Inconclusive† | | |
| | Williamson (2008) | Medium | Inconclusive | | |
| | Kamper (2008) | High | Inconclusive | ⊗⊗ | Low | Inconclusive |
| | Carroll (2008) | Medium | Limited evidence of sig. association | | |
| | Williamson (2008) | Medium | Inconclusive | | |
| General stress unrelated to accident | Kamper (2008) | High | Inconclusive | ⊗⊗⊗⊗ | High | Inconclusive |
| | Williamson (2008) | Medium | Inconclusive | | |
| | Scholten-Peeters (2003) | Medium | Inconclusive | | |
| Blame & Anger | Williamson (2008) | Medium | Inconclusive | ⊗ | Very low | Inconclusive |
| Social function | Kamper (2008) | High | Inconclusive | ⊗⊗ | Low | Inconclusive |
| Self-Efficacy | Williamson (2008) | Medium | Limited evidence of sig. association | ⊗ | Very low | Risk |
| Life Control | Williamson (2008) | Medium | Limited evidence of no association | ⊗ | Very low | No effect |
| Insomnia | Kamper (2008) | High | Strong evidence of sig. association | ⊗⊗ | 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 | Balanced evidence of sig. association | ⊗ | 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) | Medium High | Strong evidence of sig. association | ⊗⊗⊗⊗ | High | Risk |
| | Kamper (2008) | Medium | Strong evidence of sig. association | | |
| | Carroll (2008) | Medium | Consistent evidence of sig. association | | |
| | Williams (2007) | Medium | Moderate evidence of sig. association | | |
| | Scholten-Peeters (2003) | Medium | Strong evidence of sig. association | | |
| High number of different symptoms | Kamper (2008) | High | Inconclusive | ⊗ | Very low | Risk |
| | Carroll (2008) | Medium | Strong evidence of sig. association | | |
| | Williams (2007) | Medium | Inconclusive | | |
| | Scholten-Peeters (2003) | Medium | Limited evidence of sig. association | | |
| Predictor                                           | Primary Author (Year) | Quality of Review | Summary of Findings (from Review)                                                                 | Confidence in Conclusions | Risk/No Effect |
|-----------------------------------------------------|-----------------------|-------------------|--------------------------------------------------------------------------------------------------|---------------------------|---------------|
| High neck-related disability                        | Walton (2012)         | Medium            | Strong evidence of sig. association                                                              | High                       | Risk          |
|                                                     | Kamper (2008)         | High              | Strong evidence of sig. association                                                              |                           |               |
|                                                     | Carroll (2008)        | Medium            | Strong evidence of sig. association                                                              |                           |               |
|                                                     | Williams (2007)       | Medium            | Moderate evidence of sig. association                                                            |                           |               |
| Shoulder or upper extremity pain                    | Kamper (2008)         | High              | Strong evidence of no effect                                                                     | Low                        | No effect      |
|                                                     | Williams (2007)       | Medium            | Inconclusive                                                                                     |                           |               |
| WAD grade                                           | Walton (2009)         | Medium            | Moderate evidence of sig. association†                                                           | Low                        | Risk          |
|                                                     | Kamper (2008)         | High              | Inconclusive                                                                                     |                           |               |
|                                                     | Carroll (2008)        | Medium            | Strong evidence of sig. association                                                              |                           |               |
|                                                     | Williams (2007)       | Medium            | Inconclusive                                                                                     |                           |               |
|                                                     | Scholten-Peeters (2003)| Medium          | Inconclusive                                                                                     |                           |               |
| Presence of any headache                            | Walton (2009)         | Medium            | Strong evidence of sig. association Limited evidence of no association                            | Very low                   | Risk          |
|                                                     | Kamper (2008)         | High              | Inconclusive                                                                                     |                           |               |
| High intensity headache                              | Carroll (2008)        | Medium            | Strong evidence of sig. association                                                              | Low                        | Risk          |
|                                                     | Williams (2007)       | Medium            | Inconclusive                                                                                     |                           |               |
| Back pain                                           | Walton (2012)         | Medium            | Limited evidence of sig. association Inconclusive                                                 | Very low                   | Risk          |
|                                                     | Kamper (2008)         | High              | Inconclusive                                                                                     |                           |               |
|                                                     | Williams (2007)       | Medium            | Inconclusive                                                                                     |                           |               |
| Radicular/peripheral neurological symptoms‡          | Walton (2009)         | Medium            | Inconclusive                                                                                     | Low                        | Risk          |
|                                                     | Kamper (2008)         | High              | Moderate evidence of sig. association                                                            |                           |               |
|                                                     | Carroll (2008)        | Medium            | Moderate evidence of sig. association                                                            |                           |               |
|                                                     | Williams (2007)       | Medium            | Moderate evidence of sig. association                                                            |                           |               |
|                                                     | Scholten-Peeters (2003)| Medium          | Inconclusive                                                                                     |                           |               |
| Early onset of symptoms after accident              | Williams (2007)       | Medium            | Inconclusive                                                                                     | Moderate                   | Inconclusi     |
|                                                     | Scholten-Peeters (2003)| Medium          | Inconclusive                                                                                     |                           |               |
| Disturbed sleep                                      | Walton (2009)         | Medium            | Inconclusive                                                                                     | Moderate                   | Inconclusi     |
|                                                     | Scholten-Peeters (2003)| Medium          | Inconclusive                                                                                     |                           |               |
| Dizziness                                           | Kamper (2008)         | High              | Moderate evidence of no association Inconclusive                                                  | Very low                   | No effect      |
|                                                     | Williams (2007)       | Medium            | Inconclusive                                                                                     |                           |               |
| Blurred vision                                       | Kamper (2008)         | High              | Inconclusive                                                                                     | High                       | Inconclusi     |
|                                                     | Williams (2007)       | Medium            | Inconclusive                                                                                     | Very low                   | Inconclusi     |
| Fatigue                                              | Williams (2007)       | Medium            | Inconclusive                                                                                     | Very low                   | Inconclusi     |
| Sensitivity to noise or light                        | Williams (2007)       | Medium            | Inconclusive                                                                                     | Very low                   | Inconclusi     |
| Auditory disturbance                                 | Kamper (2008)         | High              | Moderate evidence of no association                                                              | Low                        | No effect      |
| Quality of life                                      | Kamper (2008)         | High              | Strong evidence of sig. association                                                              | Low                        | Risk          |
| Difficulty swallowing                                | Williams (2007)       | Medium            | Inconclusive                                                                                     | Low                        | Inconclusi     |
| Feeling of neck stiffness                            | Kamper (2008)         | High              | Moderate evidence of no effect                                                                  | Very 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)                               | Medium            | Inconclusive                                           |                           |               |
|                                                                | Kamper (2008)                               | High              | Inconclusive                                           |                           |               |
|                                                                | Carroll (2008)                              | Medium            | Inconclusive                                           |                           |               |
|                                                                | Williams (2007)                             | Medium            | Inconclusive                                           |                           |               |
|                                                                | Scholten-Peeters (2003)                     | Medium            | Inconclusive                                           |                           |               |
| Cold hypersensitivity/hyperalgesia                            | Kamper (2008)                               | High              | Moderate evidence of sig. association                   |                           |               |
|                                                                | Williams (2007)                             | Medium            | Moderate evidence of sig. association                   |                           |               |
| Mechanical hyperalgesia                                       | Carroll (2008)                              | Medium            | Limited evidence of sig. association                    |                           |               |
|                                                                | Williams (2007)                             | Medium            | Limited evidence of no association                      |                           |               |
| Reduced superficial neck muscle recruitment/ altered muscle recruitment patterns (EMG) | Kamper (2008)                               | High              | Moderate evidence of sig. association                   |                           |               |
|                                                                | Carroll (2008)                              | Medium            | Moderate evidence of sig. association                   |                           |               |
|                                                                | Williams (2007)                             | Medium            | Limited evidence of sig. association                    |                           |               |
| Abnormalities on diagnostic imaging (MRI, X-ray)              | Kamper (2008)                               | High              | Inconclusive                                           |                           |               |
|                                                                | Carroll (2008)                              | Medium            | Limited evidence of no association                      |                           |               |
|                                                                | Williams (2007)                             | Medium            | Inconclusive                                           |                           |               |
| Abnormalities on diagnostic imaging (MRI, X-ray)              | Scholten-Peeters (2003)                     | Medium            | Limited evidence of no association                      |                           |               |
| Angular deformity of the neck (scoliosis, flattened cervical lordosis) | Kamper (2008)                               | High              | Strong evidence of no association                       |                           |               |
|                                                                | Scholten-Peeters (2003)                     | Medium            | Strong evidence of no association                       |                           |               |
| Anthropometrics: Height                                       | Kamper (2008)                               | High              | Moderate evidence of no association                     |                           |               |
|                                                                | Williams (2007)                             | Medium            | Inconclusive                                           |                           |               |
| Anthropometrics: Body Mass Index                              | Walton (2009)                               | Medium            | Inconclusive                                           |                           |               |
|                                                                | Kamper (2008)                               | High              | Inconclusive                                           |                           |               |
|                                                                | Williams (2007)                             | Medium            | Inconclusive                                           |                           |               |
| Joint Position Error                                          | Kamper (2008)                               | High              | Inconclusive                                           |                           |               |
| Motor-evoked potentials                                       | Williams (2007)                             | Medium            | Inconclusive                                           |                           |               |
| Cranial nerve or brainstem disturbance                        | Williams (2007)                             | Medium            | Inconclusive                                           |                           |               |
| Muscle spasm                                                  | Williams (2007)                             | Medium            | Inconclusive                                           |                           |               |
| Low workload in cervical muscles                               | Scholten-Peeters (2003)                     | Medium            | Limited evidence of sig. association                    |                           |               |

*: 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 s1c 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            | Limited evidence of sig. association |                           | Risk          |
| Receiving compensation                           | Scholten-Peeters (2003)| Medium           | Strong evidence of no association  |                           | No effect      |
| Lawyer involvement                               | Carroll (2008)        | Medium            | Moderate evidence of sig. association |                           | Risk          |
|                                                   | McClune (2002)        | Medium            | Consistent evidence of sig. association |                           |               |
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            | Limited evidence of sig. association                   | ☄                        | Risk           |
| Psychosocial work factors (undefined) | Williamson (2008)     | Medium            | Limited evidence of no association                     | ☄                        | No effect       |
| Social support                        | Williamson (2008)     | Medium            | Limited evidence of no association                     | ☄                        | 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)         | Medium            | Moderate evidence of sig. association                   | ☄                        | Inconclusive   |
|                                      | Kamper (2008)         | High              | Strong evidence of no association                      | ☄                        | Inconclusive   |
|                                      | Carroll (2008)        | Medium            | Inconclusive                                           | ☄                        | Inconclusive   |
|                                      | Scholten-Peeters (2003)| Medium         | Strong evidence of no association                      | ☄                        | Inconclusive   |
| Older age*                           | Walton (2009)         | Medium            | Moderate evidence of no association                     | ☄                        | No effect       |
|                                      | Kamper (2008)         | High              | Strong evidence of no association                      | ☄                        | No effect       |
|                                      | Carroll (2008)        | Medium            | Inconclusive                                           | ☄                        | No effect       |
|                                      | Scholten-Peeters (2003)| Medium         | Strong evidence of no association                      | ☄                        | No effect       |
| Lower education‡                     | Walton (2012)         | Medium            | Strong evidence of sig. association                    | ☄                        | Risk           |
|                                      | Kamper (2008)         | High              | Inconclusive                                           | ☄                        | Risk           |
|                                      | Carroll (2008)        | Medium            | Inconclusive                                           | ☄                        | 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            | Limited evidence of sig. Association                   | ☄                        | Risk           |
| Frequent medical or rehabilitation visits                     | Carroll (2008)        | Medium            | Limited evidence of sig. association                   | ☄                        | Risk           |
| Initial treatment received in hospital                        | Scholten-Peeters (2003) | Medium          | Inconclusive                                           | ☄                        | Inconclusive   |
| Need for a cervical collar >12 weeks post-injury               | Scholten-Peeters (2003) | Medium          | Inconclusive                                           | ☄                        | Inconclusive   |
| Attendance at community-based rehabilitation clinics           | Carroll (2008)        | Medium            | Limited evidence of sig. association                   | ☄                        | Risk           |
| Early return to pre-accident activities                       | McClune (2002)        | Low               | Consistent evidence of sig. association                | ☄                        | Risk           |
| Need to resume physiotherapy after initial treatment           | Scholten-Peeters (2003) | Medium          | Limited evidence of sig. association                   | ☄                        | Risk           |
| Over-medicalization (not defined)                              | McClune (2002)        | Low               | Balanced evidence of sig. association                  | ☄                        | 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 | Limited evidence of sig. association Inconclusive Moderate evidence of sig. association Inconclusive | ☺☺ Low                  | Risk          |
| Pre-injury headache (self-report)              | Walton (2012) Carroll (2008) Williams (2007) Scholten-Peeters (2003) | Medium Medium Medium | Limited evidence of no association Limited evidence of sig. association Inconclusive Inconclusive | ☺ Very low               | Inconclusi ve |
| Pre-existing findings (e.g. degeneration) on diagnostic imaging | Williams (2007) Scholten-Peeters (2003) McClune (2002) | Medium Medium Low | Inconclusive Inconclusive Balanced evidence of sig. association | ☺☺ Low                  | Inconclusi ve |
| Pre-injury mental health problems              | Carroll (2008) Williamson (2008) Scholten-Peeters (2003) | Medium Medium Medium | Limited evidence of sig. association Inconclusive Limited evidence of sig. association | ☺ Very low               | Risk          |
| Pre-injury back pain                           | Williams (2007)                           | Medium            | Inconclusive                                                      | ☺ Very low               | Inconclusi ve |
| Pre-injury widespread pain                     | Williams (2007)                           | Medium            | Limited evidence of sig. association                               | ☺ 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            | Limited evidence of sig. association | ☺ Very low               | Risk          |
| Higher need to be social | Non-specific neck pain | Carroll (2009)        | Medium            | Limited evidence of sig. association | ☺ Very low               | Risk          |
| High levels of worry    | Non-specific neck pain | McLean (2007)         | Medium            | Limited evidence of sig. association | ☺ Very low               | Risk          |
| Passive coping strategies | Non-specific neck pain | Carroll (2009)        | Medium            | Limited evidence of sig. association | ☺ Very low               | Risk          |
| Anger or frustration    | Non-specific neck pain | Carroll (2009)        | Medium            | Limited evidence of sig. association | ☺ 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 | Limited evidence of sig. association | Low | Risk |
| Stable neck pain over past 2 weeks | Non-specific neck pain | McLean (2007) | Medium | Limited evidence of sig. association | 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 | Limited evidence of sig. association | Very low | Risk |
| Numbness in hands or fingers | Non-specific neck pain | McLean (2007) | Medium | Limited evidence of sig. association | Very low | Risk |
| Vitality | Non-specific neck pain | Carroll (2009) | Medium | Limited evidence of sig. association | 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) | Low | Limited evidence of sig. 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) | Medium | Limited evidence of sig. association Strong evidence of no association | Very low | Inconclusive |
| Little influence on own work situation | Non-specific neck pain | McLean (2007) | Medium | Limited evidence of sig. association | Very low | Risk |
| Unemployed | Non-specific neck pain | McLean (2007) | Medium | Limited evidence of sig. association | Very low | Low |
| Low social support | Non-specific neck pain | McLean (2007) | Medium | Limited evidence of sig. association Inconclusive† | Low | Inconclusive |
| Remaining in same job | Work-related neck pain | Carroll (2008) | Medium | Moderate evidence of sig. association | Low | Risk |
| Sedentary outside of work | Work-related neck pain | Carroll (2008) | Medium | Moderate evidence of sig. association | 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            | Carroll (2008)        | Medium            | Inconclusive                                          | ☜ Very low                | Inconclusive    |
|                            | Non-specific neck pain            | Carroll (2009)        | Medium            | Inconclusive Limited evidence of sig. association      |                           |                |
|                            | Non-specific neck pain            | McLean (2007)         | Medium            | Limited evidence of sig. association*                 |                           |                |
| Older age                  | Work-related neck pain            | Carroll (2008)        | Medium            | Strong evidence of no association                     | ☜ ☞ Low                   | No effect       |
| Older age                  | Non-specific neck pain            | Carroll (2009)        | Medium            | Strong evidence of sig. association Moderate evidence of sig. association* | ☜ ☞ ☞ High               | Risk           |
|                            | Non-specific neck pain            | McLean (2007)         | Medium            | Limited evidence of sig. association*                 |                           |                |
* 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               | Moderate evidence of sig. association                  | ☜ 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            | Carroll (2009)        | Medium            | Limited evidence of sig. association Limited evidence of sig. association | ☞ ☞ Low                   | Risk           |
| History of neck trauma                   | Non-specific neck pain            | Carroll (2009)        | Medium            | Limited evidence of sig. association Limited evidence of sig. association | ☞ ☞ Low                   | Risk           |
| Headaches in the prior year              | Non-specific neck pain            | McLean (2007)         | Medium            | Limited evidence of sig. association Limited evidence of sig. association* | ☞ Low                     | Risk           |
| Pre-existing low back pain               | Non-specific neck pain            | Carroll (2009)        | Medium            | Limited evidence of sig. association Limited evidence of sig. association Limited evidence of sig. association | ☞ Low                     | Risk           |
| History of shoulder problems             | Non-specific neck pain            | McLean (2007)         | Medium            | Limited evidence of sig. association Limited evidence of sig. association | ☞ Low                     | Risk           |
| History of other MSK disorders           | Work-related neck pain            | Carroll (2008)        | Medium            | Moderate evidence of sig. association Strong evidence of sig. association | ☞ ☞ Moderate              | Risk           |
| General health (self-reported)           | Non-specific neck pain            | Carroll (2009)        | Medium            | Limited evidence of sig. association Limited evidence of no association | ☞ Low                     | Inconclusive    |
| Low QoL (self-reported)                  | Non-specific neck pain            | McLean (2007)         | Medium            | Limited evidence of sig. association Limited evidence of sig. association | ☞ Low                     | Risk           |
| Regular cycling prior to episode         | Non-specific neck pain            | Carroll (2009)        | Medium            | Limited evidence of sig. association Limited evidence of sig. association | ☞ Low                     | Risk           |
| Regular physical activity                | Non-specific neck pain            | Carroll (2009)        | Medium            | Moderate evidence of no association Strong evidence of sig. association | ☞ Low                     | Protective     |
| Prior sick leave                         | Work-related neck pain            | Carroll (2008)        | Medium            | Moderate evidence of sig. association Limited evidence of sig. association | ☞ Low                     | Risk           |
| Treatment prior to current surgery       | Post-Sx military†                 | Carroll (2008)        | Medium            | Limited evidence of sig. association Limited evidence of sig. association | ☞ 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