

# Manual treatment for neck pain; how strong is the evidence?

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# Evidence

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Strongest evidence

Study level data

Systematic reviews (SRs)

Randomized controlled trials (RCTs)

Observational studies  
Clinical experience  
Expert opinion

Weakest evidence

Patient level data

# Manual therapy

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## Included:

- Manipulation
- Mobilization
- Massage
- Traction
- Stretching
- Myofascial therapy

## Excluded:

- Not given by hand
- Not applied to the spine
- Multiple therapies not given to control group

# Neck pain

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## Included:

- Non-specific neck pain without radiculopathy
- Acute (<3 months)
- Chronic (>3 months)
- Other duration

## Excluded:

- Radiculopathy
- Whiplash
- Cervicogenic headache
- Shoulder pain
- Multiple complaints

# Summarizing evidence

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| Level       | RCTs                             |
|-------------|----------------------------------|
| Strong      | 3 high quality                   |
| Moderate    | 2 high quality or 4 low quality  |
| Limited     | 1 high quality                   |
| Conflicting | Results too different to combine |

# RCT quality

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## Criteria:

1. Allocation concealment
2. Withdrawal rate
3. Co-interventions
4. Intention-to-treat
5. Compliance
6. Baseline characteristics
7. Randomization

## Scoring:

Unclear/inadequate = 0

Adequate = 1

Maximum 7

Low quality: 0-4

High quality: 5-7

# Results

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## **Outcomes:**

### **Pain:**

- VAS
- NPRS
- McGill
- Million

### *Function:*

- *NDI*

## **Comparisons:**

### **Between groups:**

- At follow-up

### *Within groups:*

- *Baseline to follow-up*

# Results

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| Source              | RCTs found | RCTs included |
|---------------------|------------|---------------|
| 2 Cochrane SRs*     | 74         | 16            |
| Medline search 2008 | 144        | 10            |
| Other               | 3          | 3             |
| Total               | 218        | <b>29</b>     |

\* Massage for mechanical neck disorders, 2006  
Manipulation and mobilization for mechanical neck disorders, 2004



# Results

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| Type                            | RCTs      |
|---------------------------------|-----------|
| Acute neck pain (<3 months)     | 4         |
| Chronic neck pain (>3 months)   | 10        |
| <i>Other duration neck pain</i> | <i>15</i> |
| <i>High quality</i>             | <i>17</i> |
| <i>Low quality</i>              | <i>12</i> |

# Results

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## Manual therapies:

- C/S HVLA SMT
- C/S mobilization
- Instrument thrust
- Joint mobilization
- Massage
- Muscle energy technique
- Osteopathic mobilization
- Soft tissue mobilization
- T/S HVLA SMT
- T/S mobilization
- TCM massage

## Manual therapists:

- Acupuncturist
- Bone setter
- Chiropractor
- Manual medicine physician
- Manual physical therapist
- Massage therapist
- Osteopath
- Physical therapist

# Follow-up

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| Category        | Length     |
|-----------------|------------|
| Very short term | <1 month   |
| Short term      | 1-3 months |
| Medium term     | 3-6 months |
| Long term       | >6 months  |

# Acute neck pain – Very short term

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| <b>Evidence</b>                           | <b>Intervention</b>   | <b>Control</b>   | <b>Results</b>                   |
|---|---|--|----------------------------------|
| 1 low quality RCT<br>Nordemar et al, 1981 | mobilization<br>Massage<br>Heat<br>Traction<br>exercise<br>Education<br>Neck collar<br>Medication | 1. Neck collar<br>Medication<br>TENS<br>Education<br>2. Medication<br>Neck collar<br>Education | Intervention superior to control |
| 1 low quality RCT<br>Pikula et al, 1999   | Manipulation (ipsilateral)  | 1. Manipulation (contralateral)<br>2. Detuned US   | Intervention superior to control |

# Acute neck pain – Very short term

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## Limited evidence – Manual therapy superior

- 3x30 mins/wk for 2 wks mobilization, massage, heat, traction, exercise, education, neck collar versus:
  1. 3x30 mins/wk for 2 wks neck collar, medication, education, TENS
- single HVLA SMT ipsilateral to pain versus:
  1. single HVLA SMT contralateral to pain
  2. detuned US

# Acute neck pain – Short term

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| <b>Evidence</b>                           | <b>Intervention</b>   | <b>Control</b>                  | <b>Results</b>                      |
|---|---|---------------------------------|-------------------------------------|
| 1 low quality RCT<br>McKinney et al, 1989 | mobilization<br>Traction<br>Heat/ice<br>Diathermy<br>exercise | Education<br>Rest<br>Medication | Intervention superior<br>to control |

# Acute neck pain – Short term

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## Limited evidence – Manual therapy superior

- 3x40 mins/wk for 6 wks with mobilization, traction, heat/ice, diathermy, and exercise versus:
  1. single session education, rest, and medication

# Chronic neck pain – Very short term

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| <b>Evidence</b>                          | <b>Intervention</b>                                    | <b>Control</b>  | <b>Results</b>                        |
|--|--|---|---------------------------------------|
| 1 high quality RCT<br>Jordan et al, 1998 | Manipulation<br>Manual traction<br>Massage<br>Exercise | 1. Massage<br>US<br>mobilization<br>Exercise<br>Heat<br><br>2. Exercise<br>Stretching | Intervention<br>equivalent to control |



# Chronic neck pain – Very short term

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## Limited evidence – Manual therapy equivalent

- 2x20 mins/wk for 6 wks with HVLA SMT, manual traction, myofascial therapy, and home exercise versus:
  1. 2x75 mins/wk for 6 wks of stretching and strengthening exercises
  2. 2x30 mins/wk for 6 wks of heat, massage, manual traction, mobilization, PNF, home exercise

# Chronic neck pain – Short term

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| <b>Evidence</b>   | <b>Intervention</b>                               | <b>Control</b>  | <b>Results</b>                        |
|---|---|---|---------------------------------------|
| 1 low quality RCT<br>Hakkinen et al, 2007<br>1 high quality RCT<br>Ylinen et al, 2007 | mobilization<br>Massage<br>Stretching             | Education<br>Stretching exercise                        | Intervention equivalent<br>to control |
| 1 high quality RCT<br>Bronfort et al, 2001  | Manipulation<br>Massage<br>Exercise<br>Stretching | 1. Stretching<br>Exercise<br>2. Manipulation<br>Massage | Intervention equivalent<br>to control |
| 1 high quality RCT<br>Giles et al, 2003   | Manipulation                                      | 1. Acupuncture<br>2. Medication                         | Intervention superior to<br>control   |
| 1 low quality RCT<br>Cen et al, 2003  | Massage   | 1. Exercise<br>Stretching<br>Heat<br>2. No treatment    | Intervention superior to<br>control   |
| 1 low quality RCT<br>Allison et al, 2002  | mobilization<br>Massage<br>+/- exercise           | T/S mobilization<br>Exercise                            | Intervention superior to<br>control   |

# Chronic neck pain – Short term

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## Limited evidence – Manual therapy equivalent

- 2x30 mins/wk for 4 wks of mobilization, massage, and stretching versus:
  1. education and daily home stretching
- 2x60 mins/wk for 11 wks HVLA SMT to C/S and T/S, massage, and strengthening/stretching exercises versus:
  1. 2x60 mins/wk for 11 wks HVLA SMT to C/S and T/S, massage
  2. 2x60 mins/wk for 11 wks strengthening/stretching exercises

# Chronic neck pain – Short term

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## Limited evidence – Manual therapy superior

- 2x20 mins/wk for 9 wks **HVLA SMT** to C/S versus:
  1. 9 wks **medication**
  2. 2x20 mins/wk for 9 wks **acupuncture**
- 3x30 mins/wk for 6 wks **TCM massage** versus:
  1. 1/wk heat, stretching, home **exercise**
- 8 wks **soft tissue and joint mobilization**, home exercise versus:
  1. **T/S mobilization** and home exercise
  2. **no treatment**

# Chronic neck pain – Medium term

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| <b>Evidence</b>   | <b>Intervention</b>                                    | <b>Control</b>  | <b>Results</b>                     |
|---|--|---|------------------------------------|
| 1 high quality RCT<br>Bronfort et al, 2001  | Manipulation<br>Massage<br>Exercise<br>Stretching      | 1. Stretching<br>Exercise<br>2. Manipulation<br>Massage                           | Intervention equivalent to control |
| 1 low quality RCT<br>Hakkinen et al, 2007<br>1 high quality RCT<br>Ylinen et al, 2007 | mobilization<br>Massage<br>Stretching                  | 1. Stretching<br>Exercise<br>2. Exercise  | Intervention equivalent to control |
| 1 high quality RCT<br>Jordan et al, 1998  | Manipulation<br>Manual traction<br>Massage<br>Exercise | 1. Massage<br>US<br>mobilization<br>Exercise<br>Heat<br>2. Exercise<br>Stretching | Intervention equivalent to control |
| 1 low quality RCT<br>Allison et al, 2002  | mobilization<br>Massage<br>Exercise                    | No treatment  | Intervention superior to control   |

# Chronic neck pain – Medium term

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## Limited evidence – Manual therapy equivalent

- 2x60 mins/wk for 11 wks HVLA SMT to C/S and T/S, massage, and strengthening/stretching exercises versus:
  1. 2x60 mins/wk for 11 wks HVLA SMT to C/S and T/S, massage
  2. 2x60 mins/wk for 11 wks strengthening/stretching exercises
- 2x30 mins/wk for 4 wks of mobilization, massage, and stretching versus:
  1. education and daily home stretching
- 2x20 mins/wk for 6 wks with HVLA SMT, manual traction, myofascial therapy, and home exercise versus:
  1. 2x75 mins/wk for 6 wks of stretching and strengthening exercises
  2. 2x30 mins/wk for 6 wks of heat, massage, manual traction, mobilization, PNF, home exercise

# Chronic neck pain – Medium term

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## Limited evidence – Manual therapy superior

- 8 wks soft tissue and joint mobilization, home exercise versus:
  1. T/S mobilization and home exercise
  2. no treatment

# Chronic neck pain – Long term

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| <b>Evidence</b>                            | <b>Intervention</b>                                    | <b>Control</b>  | <b>Results</b>                        |
|--|--|---|---------------------------------------|
| 1 high quality RCT<br>Jordan et al, 1998   | Manipulation<br>Manual traction<br>Massage<br>Exercise | 1. Massage<br>mobilization<br>Exercise<br>Heat<br>2. Exercise<br>Stretching | Intervention equivalent<br>to control |
| 1 high quality RCT<br>Evans et al, 2002    | Manipulation<br>Massage<br>Exercise<br>Stretching      | Manipulation<br>Massage   | Intervention equivalent<br>to control |
| 1 low quality RCT<br>Muller et al, 2005    | Manipulation   | 1. Acupuncture<br>2. Medication   | Intervention equivalent<br>to control |
| 1 high quality RCT<br>Bronfort et al, 2001 | Manipulation<br>Massage<br>Exercise<br>Stretching      | Manipulation<br>Massage   | Intervention superior to<br>control   |
| 1 high quality RCT<br>Evans et al, 2002    | Manipulation<br>Massage                                | Stretching<br>Exercise  | Intervention inferior to<br>control   |



# Chronic neck pain – Long term

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## Limited evidence – Manual therapy equivalent

- 2x20 mins/wk for 6 wks with HVLA SMT, manual traction, myofascial therapy, and home exercise versus:
  1. 2x75 mins/wk for 6 wks of stretching and strengthening exercises
  2. 2x30 mins/wk for 6 wks of heat, massage, manual traction, mobilization, PNF, home exercise
- 2x60 mins/wk for 11 wks HVLA SMT to C/S and T/S, massage, and strengthening/stretching exercises versus:
  1. 2x60 mins/wk for 11 wks HVLA SMT to C/S and T/S, massage
- 2x20 mins/wk for 9 wks HVLA SMT to C/S versus:
  1. 9 wks medication
  2. 2x20 mins/wk for 9 wks acupuncture

# Chronic neck pain – Long term

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## Limited evidence – Manual therapy superior

- 2x60 mins/wk for 11 wks **HVLA SMT** to C/S and T/S, massage, and strengthening/stretching **exercises** versus:
  1. 2x60 mins/wk for 11 wks **HVLA SMT** to C/S and T/S, massage

# Chronic neck pain – Long term

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## Limited evidence – **Manual therapy inferior**

- 2x60 mins/wk for 11 wks **HVLA SMT** to C/S and T/S, massage versus:
  1. 2x60 mins/wk for 11 wks strengthening/stretching **exercises**

# Summary

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- 29 RCTs were found on manual therapy for acute, chronic, and other duration neck pain
- The majority of RCTs were of high quality
- Most RCTs were too different to combine, restricting the highest potential level of evidence to “limited”
- Many different manual therapies were compared to each other and non-manual therapy controls
- Several types of health providers, including chiropractors, delivered the manual therapies
- It was not possible to compare the results of the same manual therapies given by different providers

# Summary

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- Very short, short, medium, and long term results for improvement in pain outcomes are mostly positive
- Manual therapies appear superior or equivalent to non-manual therapy controls
- No clear differences were apparent between different types of manual therapy
- Manual therapy combined with exercise appears most promising for long term results

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