Effectiveness of Manual Therapy, what do we know?

door Gerard Koel, FT, MSc, SNN
1. What is Manual Therapy?
2. How can we determine the effectiveness of a treatment?
3. What is the over-all conclusion in recent SR’s?
4. Is effectiveness the same as external evidence?
5. How does MT work (the rationale) & the relation with shoulder problems?
6. Conclusions.
An enquete to start with ……

• How many MT’s are in the audience ??

• Do you apply mobilisations / HVT’s in SP patients?
  
a- in 0 – 20% of the SP patients  
b- in 20 – 40% of my SP patients  
c- in 40 – 60% of the SP patients  
d- in more than 60% of the SP patients  
e- in almost every SP patient

• What is your reason / rationale to do so ??
What is MT?

• Wat is manuele therapie?
• Wat is de relatie met ‘gewone’ FT?
• Wat is de relatie met oefentherapie?

• Ook FT passen mobilisaties toe
• Ook FT werken ‘hands – on’
• Is massage ook MT
• HVT’s en SM’s zijn MT in engere zin
• MT kennen ook MT in brede zin
Is it about education to master level??

Is it about a specific diploma??
How do we determine the effectiveness of MT?
**Systematic review**

- Formulate question
- Select outcomes
- Rate importance
- Outcomes across studies
- Create evidence profile with GRADEpro
- Rate quality of evidence for each outcome

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Critical</th>
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<tbody>
<tr>
<td>Outcome</td>
<td>Critical</td>
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<tr>
<td>Outcome</td>
<td>Important</td>
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<tr>
<td>Outcome</td>
<td>Not important</td>
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Summary of findings & estimate of effect for each outcome

- High
- Moderate
- Low
- Very low

**Guideline development**

Formulate recommendations:
- For or against (direction)
- Strong or weak (strength)

By considering:
- Quality of evidence
- Balance benefits/harms
- Values and preferences

Revise if necessary by considering:
- Resource use (cost)

By considering:
- Resource use (cost)

Rate overall quality of evidence across outcomes based on lowest quality of critical outcomes

- “We recommend using…”
- “We suggest using…”
- “We recommend against using…”
- “We suggest against using…”
Hoe komen we tot de beste externe onderbouwing?

1. Het formuleren van een goede onderzoek vraag (PICO)
2. Het verzamelen / selecteren van de klinische studies (observationeel & liefst: experimenteel)
3. Het graderen / klasseren van die onderbouwing in 4 categorieën: de kwaliteit = ‘high – moderate – low – very low’
4. Upgraden of downgraden van de studies
5. Uiteindelijk bepaalt de laagste kwaliteit de ‘overall quality’
7. Formuleer de aanbeveling:
   ‘Er is sterk / zwak bewijs voor / tegen de toepassing van deze interventie.”


3. What is the conclusion of the ‘SR’ results?
Is manual therapy and exercise (with or without electrotherapy) more effective than placebo, no intervention or another active intervention (e.g. glucocorticoid injection, oral non-steroidal anti-inflammatory drug (NSAID), arthroscopic subacromial decompression)?

In 10 trials, manual therapy and exercise was compared with either placebo (Bennell 2010), no intervention (Dickens 2005; Kachingwe 2008) or another active intervention (Cloke 2008; Ginn 2005; Haahr 2005; Hay 2003; Rhon 2014; Szczurko 2009; Winters 1997).
### Report with GRADE methodology

<table>
<thead>
<tr>
<th>Uitkomsten</th>
<th>Absolute effecten (95% CI)</th>
<th>Aantal deelnemers (aantal studies)</th>
<th>Kwaliteit van het bewijs (GRADE)</th>
<th>Opmerkingen</th>
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<td></td>
<td>Uitkomsten (95% CI)</td>
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<td>Absolute effecten (95% CI)</td>
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<td>Risico controle</td>
<td>Risico interventie</td>
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<td>Pijn (evt. follow up)</td>
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<td>☪ ☪ ☩ ☩ laag</td>
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<td>Functie (evt. follow up)</td>
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<td>☪ ☪ ☪ ☪ hoog</td>
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<td>Risico controle</td>
<td>Risico interventie</td>
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<td></td>
<td>Pijn – SPADIpijn (na 22 weken)</td>
<td>Verbetering controle groep: 17,3 punten</td>
<td>Verbetering interventie groep: 24,1 punten</td>
<td>120 (1 RCT)</td>
</tr>
<tr>
<td></td>
<td>Functie - SPADI totaal (22 wk)</td>
<td>Verbetering controle groep: 15,6 punten</td>
<td>Verbetering interventie groep: 22,8 punten</td>
<td>120 (1 RCT)</td>
</tr>
</tbody>
</table>
### Summary of Findings for the Main Comparison

**Manual therapy and exercise compared to placebo for rotator cuff disease**

**Patient or population:** rotator cuff disease  
**Settings:** Public hospital physiotherapy units and private physiotherapy practices, Australia  
**Intervention:** soft tissue massage, glenohumeral joint mobilisation, thoracic spine mobilisation, cervical spine mobilisation, scapular retraining, postural taping and supervised exercises in 10 sessions over 10 weeks along with home exercises for 22 weeks  
**Comparison:** inactive ultrasound therapy and application of an inert gel in 10 sessions over 10 weeks

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Illustrative comparative risks* (95% CI)</th>
<th>Relative effect (95% CI)</th>
<th>No of Participants (studies)</th>
<th>Quality of the evidence (GRADE)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assumed risk</td>
<td>Corresponding risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placebo</td>
<td>manual therapy and exercise</td>
<td></td>
<td>120 (1 RCT)</td>
<td><strong>HIGH</strong></td>
<td>Absolute risk difference 7% (1% fewer to 14% more); relative percentage change 14% (1% fewer to 30% more) NNTB not applicable</td>
</tr>
</tbody>
</table>

**Overall pain**  
Assessed with SPADI pain score  
Scale from 0-100 (higher score denotes less pain)  
Follow-up: 22 weeks

- The mean improvement in overall pain score in the control group was **17.3**
- The mean improvement in overall pain score in the intervention group was **6.8 points higher** (0.7 lower to 14.3 higher)

**Function**  
Assessed with SPADI total score  
Scale from 0-100 (higher score denotes greater function)  
Follow-up: 22 weeks

- The mean improvement in function score in the control group was **15.6**
- The mean improvement in function score in the intervention group was **7.1 points higher** (0.3 higher to 13.9 higher)
In Dickens 2005, at six months the mean change in function with no treatment was 0.65 on a 100-point scale, and 20 points with manual therapy and exercise (MD 19.35, 73 participants) but the 95% CI was not estimable. No other outcomes were reported in this trial. Usable outcome data were not available in Kachingwe 2008, although the authors claimed that there were no statistically significant differences between groups in overall pain, function and active shoulder flexion at six weeks (Table 4). We downgraded by two points for high risk of performance and detection bias, and one point for imprecision, and so consider this evidence to be very low quality.
Mobilisations associated with exercises versus exercises only: Five studies compared mobilisations in the shoulder girdle, cervical and thoracic spine associated with exercises to exercises only in a follow-up of 3 – 8 weeks. High evidence was identified for mobilisation associated with exercises when compared with exercises only to decrease pain after 6-10 sessions. Moderate evidence was found towards no additional benefit of adding mobilisations to exercises only to improve function in the short term.
The Efficacy of Manual Therapy for Rotator Cuff Tendinopathy: A Systematic Review and Meta-analysis

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Studies, n</th>
<th>Total Participants, n</th>
<th>Outcome Measures and Pooled Effect</th>
<th>Conclusions</th>
<th>Quality of Evidence</th>
</tr>
</thead>
</table>
| Overall effect of MT either alone or in conjunction with another intervention compared with placebo or another intervention | 10         | 406                    | Pain (10-cm VAS)  
Pooled effect: 1.2 (95% CI: 0.8, 1.6), favoring MT                                        | Significant effect that could be clinically important                     | Low to moderate     |
| MT alone compared with a placebo                                         | 4          | 175                    | Pain (10-cm VAS)  
Pooled effect: 1.0 (95% CI: 0.6, 1.4), favoring MT                                        | Significant effect that could be clinically important                     | Low                 |
| Function                                                                 | 1          | 39                     |                                                                                                   | Unclear if MT has an effect on function                                  |                     |
| Strength and ROM                                                         | 2          | 99                     |                                                                                                   | Contradictory results                                                    |                     |
| Adding an MT intervention to exercises or to a multimodal rehabilitation program with exercises | 5          | 226                    | Pain (10-cm VAS)  
Pooled effect: 1.0 (95% CI: 0.7, 1.4), favoring MT                                        | Significant effect that could be clinically important                     | Low                 |
| Function                                                                 | 2          | 91                     |                                                                                                   | Unclear if MT has an effect on function                                  |                     |
| Function                                                                 | 6          | 287                    |                                                                                                   | MT does not improve ROM                                                  |                     |
| ROM pooled effect: -6.1° (95% CI: -20.6°, 8.4°)                           | 2          | 88                     |                                                                                                   | Contradictory results                                                    |                     |
| MT combined with other types of interventions compared with multimodal interventions | 6          | 414                    | Pain, function, ROM                                                                                   |                                                                             | Low                 |

Abbreviations: CI, confidence interval; MT, manual therapy; ROM, range of motion; VAS, visual analog scale.
• A forest plot with effectiveness MT versus placebo MT
• The mean-difference is 1,02 points op een 0 – 10 schaal
• Is dat statistisch significant? (wat is het 95% BI?)
• Is dat klinische relevant? (wat is de MCID van de NPRS?)
• A small + effect on pain >> relevant ?
• No + effects on function (ROM, strength etc.)
Thoracic manual therapy in the management of non-specific shoulder pain: a systematic review

Aimie L. Peek¹, Caroline Miller², Nicola R. Heneghan³

¹Musgrove Park Hospital, Taunton, UK, ²University Hospitals Birmingham NHS Foundation Trust, UK, ³University of Birmingham, UK

Clinical implications
The clinical implications of the review are that it is likely that clinicians can use thoracic manipulation to accelerate recovery, in terms of pain reduction and reduced disability, in an NSSP population. The use of the clinical prediction rule may help identify patients likely to respond to treatment (Appendix 1). Previous reviews
4. Is effectiveness the same as external evidence?
Is er een optimale verdeling voor EB MT?

Situatie 1
Situatie 2
Situatie 3
Categorie 4

external evidence  PT competence  pt values
Is there a preference??

• Do you prefer a high external evidence score?

• Are you pragmatic, as long as the patient is satisfied; it doesn’t matter how?

• Is your own competence the major component?
5. What is the rationale for MT?

- The biomechanical / segmental dysfunction theory. ‘specific’

- The reflectoric / neuromodulation / pain inhibiting theory. ‘a-specific’
Can you ‘live’ with both theories ??
What about the association between the SNN – KR model and the effects of MT?
HVT’s / SM’s and Mobilisations for container 1.

<table>
<thead>
<tr>
<th>ers</th>
<th>1. SAPS schouder / RC letsel</th>
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<tbody>
<tr>
<td></td>
<td>zurende pijn bovenarm</td>
</tr>
<tr>
<td></td>
<td>40-70 jaar, bovenhands werk+</td>
</tr>
<tr>
<td></td>
<td>pijnlijke weerstandstests</td>
</tr>
<tr>
<td></td>
<td>normale GH / ST mobiliteit</td>
</tr>
<tr>
<td></td>
<td>RC tendinopathie</td>
</tr>
<tr>
<td></td>
<td>RC letsel (degeneratief)</td>
</tr>
<tr>
<td></td>
<td>Cuffartropathie</td>
</tr>
<tr>
<td></td>
<td>PSI: PosteroSup. Impingement</td>
</tr>
</tbody>
</table>

1.1. Primaire SAPS/RC letsel
- bron & oorzaak SA weefsel
- klassieke Imp. tests+ (Neer, HK, Yocum)
- weerstand tests / Jobe +
- primaire hyperalgiesie
- diagnostische stuc
  - Cluster van Litaker: RC tear
  - Cluster van Park: RC Full Th. Tear

1.2. Secundaire SAPS/RC letsel
- bron SA / oorzaak elders
- bevindingen onder
HVT’s / SM’s and Mobilisations for container 2.

<table>
<thead>
<tr>
<th>2. Beperkte schouder</th>
</tr>
</thead>
<tbody>
<tr>
<td>beperkte ROM anamnese</td>
</tr>
<tr>
<td>beperkte AROM &amp; PROM</td>
</tr>
<tr>
<td>1 van 3 of 4 fasen FS?</td>
</tr>
<tr>
<td>andere oorzaak?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frozen Shoulder</th>
</tr>
</thead>
<tbody>
<tr>
<td>GH / om-artrosis</td>
</tr>
<tr>
<td>SCH met bewegingsbeperking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.1. Concentrisch beperkt</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROM meerdere richtingen</td>
</tr>
<tr>
<td>(waaronder de exorotatie)</td>
</tr>
<tr>
<td>PROM/AROM: zelfde beperking</td>
</tr>
<tr>
<td>minstens 50% in 3 richtingen</td>
</tr>
<tr>
<td>Stadia FS (3 of 4; zie onder)</td>
</tr>
<tr>
<td>Exclusie: Rö negatief</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.2. Unidirectioneel beperkt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zie onder:</td>
</tr>
<tr>
<td>PROM 1 richting beperkt</td>
</tr>
<tr>
<td>vooral in 1 / deels 2 richtingen</td>
</tr>
<tr>
<td>PROM/AROM: zelfde beperking</td>
</tr>
</tbody>
</table>
HVT’s / SM’s and Mobilisations for container 3.

<table>
<thead>
<tr>
<th>3. Instabiele schouder</th>
</tr>
</thead>
<tbody>
<tr>
<td>pijnscheuten, twinges</td>
</tr>
<tr>
<td>jongere pt (15-35 jaar)</td>
</tr>
<tr>
<td>gestoorde AROM</td>
</tr>
<tr>
<td>geen duidelijk trauma in anamnese</td>
</tr>
<tr>
<td>AMBRI / AIOS</td>
</tr>
<tr>
<td>MSI: Minor Shoulder Instability</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.1. Glenohumeraal</th>
<th>3.2. Scapulathoracaal</th>
</tr>
</thead>
<tbody>
<tr>
<td>AROM matige kwaliteit</td>
<td>Scapula dispositie</td>
</tr>
<tr>
<td>Sulcus /L&amp;S positief</td>
<td>Scapuladiskinesie</td>
</tr>
<tr>
<td>DRST / DRT positief</td>
<td>SAT / SRT positief</td>
</tr>
</tbody>
</table>
### 4. Posttraumatische schouder

- Anamnese + begin (trauma) / pijn
- Vaak jongere, sportieve patiënten
- Ook mogelijk 'acuut op chronisch'
- Vaak veel functiestoornissen
- RC ruptuur (traumatisch)
- GH (sub)luxatie / TUBS / ALPSA
- AC (sub)luxatie
- Fracturen (+ Bony apprehension test)
- Consult orthopeed meestal wenselijk

#### 4.1 GH AC banden/pezen

- Primaire hyperalgesie
- Rek-provocatie tests positief
- Hor. ddductie/Paxinos +/resisted hor. addi Pianotoets positief
- Betreft deels EHBSO

#### 4.2 GH/AC labrum/kraakbeen

- Appr-relocation-release positief
- Jerk-Kim test positief
- Pianotoets positief
- Suggestie Kompresievaartsche GH joint
HVT’s / SM’s and Mobilisations for container 5.

5. Gesensibiliseerde schouder

- niet duidelijk in 1 van de andere 4 containers
- myofasciaal beeld, spierketen of met neurologie sensitisatie (segmentaal / algemeen), dis-stress
- slechte algemene conditie / belastbaarheid

Niet-somatische SP / SOLK
Atypische Schouder Pijn
SP met co-morbiditeit

5.1 Myofasciaal/keten
- Actieve MTP's
- Local twitch respons (evt. Jump sign)
- Passend patroon referred pain

5.2. Andere reden SP
- Ontbrekend biomech. SCH patroon
- Met + neurologie (radiculopathie, N.Amyotrofie)
- Orgaanlijden & + tractus anamnese
– Should we embrace the ‘active’ placebo mechanism?
– Is the placebo effect ‘really’ helpful? Or is placebo an a-specific effect of an otherwise ineffective treatment?
– Can we make optimal use of the placebo mechanism?
Verwachting patiënt over effectiviteit FT bepaalt de kans op chirurgie!

An enquete to evaluate ......

• How many MT’s are in the audience ??

• Do you apply mobilisations / HVT’s in SP patients?

  a- in 0 – 20% of the SP patients
  b- in 20 – 40% of my SP patients
  c- in 40 – 60% of the SP patients
  d- in more than 60% of the SP patients
  e- in almost every SP patient

• What is your reason / rationale to do so ??
6. Conclusions

1. There’s an overlap between MT and PT.
2. The external evidence for the effectiveness of MT in SP patients is minimal; is short time pain relief relevant??
3. The two other EBM components: PT competence & pt values / expectations might be more important.
4. MT’s should have a academic and reflective attitude towards their profession.
• Do MT’s have to train long to realize good technical skills ?

• Is modesty a good characteristic for a MT ?
1. Background Information / Expert Opinion
2. Case-Controlled Studies / Case Series / Reports
3. Cohort Studies
4. Randomized Controlled Trials (RCTs)
5. Critically-Appraised Topics & Articles
6. Systematic Reviews

Quality of evidence:

- Lower levels contain more preliminary evidence.
- Higher levels contain more rigorous and reliable evidence.

Diagram shows a pyramid with increasing quality of evidence from the bottom to the top.