How effective is chiropractic for chronic shoulder pain?

Average improvement in chronic shoulder pain after a course of chiropractic care

75%

Data taken from:
Chronic shoulder pain of myofascial origin: a randomized clinical trial using ischemic compression therapy.
Private practice, Trois-Rivières, Côte Richelieu, Trois-Rivières, Québec, Canada.
Chronic shoulder pain patients improve nearly 80% with chiropractic care.


After a course of chiropractic care, patients with chronic shoulder pain note an average improvement of 75%.
Chronic shoulder pain of myofascial origin: a randomized clinical trial using ischemic compression therapy.
Private practice, Trois-Rivières, Côte Richelieu, Trois-Rivières, Québec, Canada.

Study background: took place at a private DC practice in Trois-Rivières, Quebec (pts responded to local advertising). 1 DC provided all tx. 59 pts were studied (46 yoa, avg./56% female). All had shoulder pain (“pain in the shoulder and upper arm, at rest or caused or aggravated by movement”), chronic daily sx for at least 3 mths (4.3 yrs, avg.), at least 5/10 sh pain. Exclusion criteria: couldn’t raise arm above head (impingement), neck mvmts caused sh pain (cervical involvement). They were randomly assigned to 1 of 2 tx groups (stratified 2:1 in favor the real tx group): 1) ischemic compression – “real-shoulder” TP’s (tx’d 3x/wk for 5 wks, 15 txs total): areas checked for TP’s included supraspinatus, deltoid, infraspinatus, and biceps tendon; thumb pressure was applied to ea. TP for 15s (light pressure initially, building to maximum pain tolerance); 2) sham-ischemic compression – “non-shoulder” TP’s: same as above, except tx’d TP’s were limited to those found in the cervical and upper thoracic spine. Results (evaluator wasn’t blinded to tx assignment): 1) % decrease in SPADI score (Shoulder Pain and Disability Index; 13 questions on pain (5) and function (8); ea. one scored from 0-10; score is typically reported as a %): a) after final tx: sham – 19% (from 72% to 58%), tx – 61% (67% to 26%; ss); b) 30d later: sham – no data, tx – 66% (67% to 23%); c) 6 mths later: sham – no data, tx – 57% (67% to 29%); 2) avg. perceived self-improvement (0-100 NRS; only measured after final tx): a) after final tx: sham – 29%, tx – 75% (ss); b) 30d later: sham – no data, tx – 74%; c) 6 mths later: sham – no data, tx – 66%. Conclusion: “...ischemic compression...may reduce the symptoms of patients with chronic shoulder pain.”
Spinal manipulation is twice as effective as medical care for shoulder pain.


Six treatments with manipulation help twice as many patients become “recovered” compared to up to 12 weeks of medical treatment (medication, injections, physical therapy, etc.).
Manipulative therapy in addition to usual medical care for patients with shoulder dysfunction and pain: a randomized, controlled trial.
University of Groningen and University Hospital of Groningen, Groningen, The Netherlands. g.j.d.bergman@med.rug.nl

Study background: Study took place in Groningen, the Netherlands. Pts were referred from 50 GP’s w/in 2 wks of initial presentation to GP. 150 shoulder pain pts were studied (48 yoa, avg./53% female). 63% had > 6 wks of sx, all had shoulder girdle pain and dysfunction ("pain between the neck and the elbow" at rest or during arm mvmt; "dysfunction of the cervicothoracic spine and the adjacent ribs with accompanying pain or restricted movement"). None had received tx for sh sx in last 3 mths. Exclusion criteria: acute severe trauma, contraindications to manipulation (hypermobility, severe arthritis, etc.), nerve root compression, etc. Randomly assigned to 1 of 2 txs (a max of 12 wks of tx): 1) (MD) usual medical care from their GP (in general, they followed the Dutch shoulder pain guidelines (on the web at “nhg.artsennet.nl/upload/104/guidelines2/ E08.htm”); also, the GP’s did not know if pt was also receiving manual therapy as part of this study): a) stay active advice; b) analgesics or NSAIDs, if necessary, for first 2-4 wks; c) corticosteroid injections (if medication didn’t help; repeat 1x, if necessary); d) PT for sx persisting at least 6 wks (shoulder ex’s, massage, and modalities - no manual therapy); e) referral to surgeon, if necessary; 2) (MT) usual medical care + manipulation (MT) (usual medical care as described above, plus manipulation): manipulative therapy included a max of 6 txs over 12 wks to improve overall joint function and decrease any restrictions in movement; a) description - It consisted of specific manipulations (low-amplitude, high-velocity thrust techniques) and specific mobilizations (high-amplitude, low-velocity thrust techniques); b) protocols - up to ea. tx’ing manual therapist; c) manual therapists - tx was given by 1 of 8 experienced Dutch PT’s (all were members of the Dutch Association of Manual Therapy) who “received a special training session to familiarize them with the protocol’s mobilization and manipulation techniques for treatment of the cervicothoracic spine and the adjacent ribs” (other interventions - like “exercises, massage, advice about posture, and treatment of the shoulder joint” - were discouraged). Results (evaluators were blinded to tx status): 1) % of pts “recovered” (“completely recovered” or “very much improved”): a) 12 wks (ss): MD - 21% (15/71), MT - 43% (34/79); b) 52 wks (ss): MD - 35% (25/71), MT - 52% (41/79); 2) % of pts “cured” (“You are considered cured if your shoulder symptoms are improved to such an extent that you no longer perceive them as inconvenient”: a) 12 wks (ns): MD - 34% (24/71), MT - 46% (36/79); b) 52 wks (ss): MD - 42% (30/71), MT - 59% (47/79); 3) % change in shoulder pain (0-10 NRS; pain during the preceding week): a) 12 wks (ss): MD - 45% better (from 6.4 to 3.5), MT - 64% better (6.9 to 2.5); b) 52 wks (ss): MD - 56% better (6.4 to 2.8), MT - 72% better (6.9 to 1.9); 4) % change in shoulder disability (used the “Shoulder Disability Questionnaire”, 16 yes/no items, scored as a %, measures function in the preceding 24 hrs): a) 12 wks (ns): MD - 30% better (61 to 43), MT - 46% better (59 to 32); b) 52 wks (ns): MD - 46% (51 to 33), MT - 63% (59 to 22). Conclusion: “In our study, manipulative therapy for the cervico-thoracic spine and the adjacent ribs in addition to usual medical care by a general practitioner accelerated recovery of shoulder symptoms.” “Manipulative therapy for the shoulder girdle in addition to usual medical care accelerates recovery of shoulder symptoms.” “For patients with shoulder symptoms...referral to a manual therapist should be considered.” Comments: 1) Drop-outs: MD - 8% (6/71; 4 - lack of motivation, 1 - lack of time, 1 - MVA), MT - 5% (4/79; 3 - lack of motivation, 1 - family circumstances); 2) Types of tx pts received: a) Injections: MD - 28%, MT - 25%; b) Physical therapy: MD - 27%, MT - 23%; c) Manual Therapy: MD - 7%, MT - 100% (3.8 sessions, avg.); d) # MD visits: MD - 2.3, MT - 2.5.
Shoulder pain improves nearly 40% after a single cervical manual therapy treatment.


Patients with treatment-resistive shoulder pain improve 35%, on average, following a single manual therapy treatment session.
Mobilizations of the asymptomatic cervical spine can reduce signs of shoulder dysfunction in adults. 


Graduate Department of Rehabilitation Sciences, University of Toronto, 500 University Avenue, Toronto, Ontario, Canada.

**Study background:** Study took place 8/05 – 5/06. 21 pts were studied (67% female/50 yoa, avg.). All had unilateral shoulder pain that was unresponsive to 2-4 PT sessions (“movement patterns”, ex’s, and modalities) over 2-3 wks. Sx were present for at least 6 wks, insidious onset, painful shoulder abduction, no neck sx currently or in the past yr, and no paresthesias or neuro deficits. They were randomly assigned to 1 of 2 txs (pts r/c ea. tx 1x, crossed over to the opposite tx 4d later): 1) cervical lateral glide mobilization: see description in indented paragraph below; 2) placebo: same setup as real tx, but no significant force was applied. 

**Results** (evaluator was blinded to tx assignment): 1) % decrease in pain during shoulder abduction (0-10 VAS): placebo – 9% (from 3.5 to 3.2), tx – 35% (3.7 to 2.4; ss); 2) % decrease in painful shoulder abduction arc (radius of the arc of pain): placebo – 26% (31 to 23), tx – 36% (33 to 21). **Conclusion:** “...cervical lateral glide mobilizations can immediately decrease the intensity of shoulder pain...”

**Cervical lateral glide mobilization:**  
*(description for a painful left shoulder)*  
1) Dr standing to the left of (and facing) the seated pt:  
- left hand stabilizes pt's head  
- thumb of right hand on left side of C5 spinous process  
2) force application:  
- left-to-right line-of-drive (toward pain-free shoulder)  
- “mobilizations were conducted for 2 min...with small amplitude end range movements”  
3) repeat at C6 and C7
How much does manual therapy help tennis elbow patients?

Percent increase in grip strength (pain-free) after undergoing a course of tennis elbow treatment

Data taken from:
Franklin Pierce College, 5 Chenell Drive, Concord, NH 03301, clelandj@fpc.edu.
Incorporation of manual therapy directed at the cervicothoracic spine in patients with lateral epicondylalgia: A pilot clinical trial.

Franklin Pierce College, 5 Chenell Drive, Concord, NH 03301, clelandj@fpc.edu.

Study background: Study took place 12/02-6/03. 10 consecutive tennis elbow pts were studied (50% female/40 yoa, avg.). All were suffering from their first episode of tennis elbow, 13 wks of sx (median duration). All had at least 2 of the following tests positive: pain w/ palpation of lat. epicondyle, pain w/ resisted wrist extension, pain w/ resisted middle finger extension. All had articular CT spine impairments (per Maitland) between occiput-T6. None had a positive upper-limb tension test. They were randomly assigned to 1 of 2 tx groups (all received 10 txs over 6 wks - 2x/wk for 4 wks, 1x/wk for last 2 wks): 1) local tx of tennis elbow (in-office tx time = 30 min’s/visit; pts were also given home exercises to do 5 days/wk): stretching of the wrist extensor tendons, strengthening of the wrist and forearm musculature, joint mobilizations directed at the elbow and wrist, advice to avoid offending activities; 2) local tx + manual therapy of the CT spine: same as above, but w/ the following differences: no strengthening exercises were done during in-office tx (done at home instead in order to keep total in-office tx time the same for the 2 groups), received grade 3-4 Maitland mobilizations directed at CT motion impairments (grade 3 mobilization = a large-amplitude mvmt which carries into stiffness or mm spasm, grade 4 mobilization = a small-amplitude mvmt which carries into stiffness or mm spasm). Results: 1) after 6 wks: a) % decrease in pain (0-10 NPRS): local tx - 66% (from 8.8 to 3.0), local tx + CT - 82% (9.0 to 1.6); b) % increase in pain-free grip strength (kg): local tx - 64% (14.6 to 24), local tx + CT - 267% (9 to 33); 2) at 6 mths: a) % decrease in pain (0-10 NPRS): local tx - 73% (8.8 to 2.4), local tx + CT - 96% (9.0 to .4); b) % increase in pain-free grip strength (kg): local tx - 122% (14.6 to 32.4), local tx + CT - 416% (9 to 46.4). Conclusion: The local tx + CT tx group “demonstrated greater improvement in all outcome measures...” “...incorporation of manual therapy directed at the cervicothoracic spine may be an effective adjunct...” Comment: Statistical analysis was not done d/t small study size.
Manipulation or exercise for tennis elbow pain?

Percent of tennis elbow patients who are "completely recovered" or "much improved" after 3 weeks of treatment

Data taken from:
Manipulation of the wrist for management of lateral epicondylitis: a randomized pilot study.
Department of Orthopaedic Surgery, Orthopaedic Research Center Amsterdam, Academic Medical Center, Meibergdreef 9, PO Box 22600, 1100 DD Amsterdam, The Netherlands.
paustruis@hotmail.com
Manipulation of the wrist for management of lateral epicondylitis: a randomized pilot study.

Study background:
Study took place from 4/2000-8/2000. The pts were recruited from 10 medical general practitioners in the Netherlands. 31 tennis elbow pts (47 yoa, avg., 54% male) were studied. All had tennis elbow (pain on the lat. elbow, pain aggravated by both pressure over the lat. epicondyle and resisted wrist ext.) for 6 wks- 6 mths (12 wks, avg.).

They were randomly assigned to 2 tx groups:
1) Exercise: 3 txs the 1st wk, 2 txs the 2nd wk, 1 tx/wk for the remaining 4 wks (9 txs total over 6 wks). Tx consisted of ultrasound (7.5 min's, 2 W/cm², pulsed), friction massage (10 min's), and stretches/exercises for wrist/elbow (2x/day, authors provide no further details);
2) Wrist manipulation 2x/wk up to a max of 9 txs over 6 wks. See indented paragraph below for technique description.

Results:
1) Dropout rate - 10% (3/31; 2 manip. pts - had to travel too far for tx, 1 exercise pt - not happy w/ results after 1 wk);
2) % of pts "completely recovered" or "much improved":
   a) after 3 wks of tx:
      • exercise - 20% (3/15), manip. - 62% (9/13; ss superior to exercise);
      b) after 6 wks of tx:
         • exercise - 67% (10/15), manip. - 85% (11/13; ns superior to exercise);
3) % change in "pain during the activity that caused the most discomfort" (on 0-10 numerical scale):
   a) after 3 wks of tx:
      • exercise - 29% better (from 7.3 to 5.2), manip. - 41% better (6.4 to 3.8; ns superior to exercise);
   b) after 6 wks of tx:
      • exercise - 51% better (7.3 to 3.6), manip. - 69% better (6.4 to 2.0; ns superior to exercise).

Conclusion:
"Manipulation of the wrist appeared to be more effective than ultrasound, friction massage, and muscle stretching and strengthening exercises for the management of lateral epicondylitis..."

Comments: There were ss baseline diff's between the 2 groups: 1) duration of sx: exercise - 9 wks, manip. - 14 wks; 2) sex: exercise - 40% male, manip. - 69% male.

Description of wrist manipulation protocols:
Tx consisted of 3 parts:
1) Wrist manipulation:
   a) pt position:
      - pt rests affected forearm on a table w/ palm down and wrist in neutral position
   b) therapist position/setup:
      - therapist sits lateral to the affected forearm (at a right angle)
      - thumb and index finger of one hand grip the pt's scaphoid
      - thumb and index finger of other hand reinforce tx'ing hand
   c) tx description:
      - extend pt's wrist as therapist's thumbs thrust through the pt's scaphoid
      - "the manipulative maneuver is a thrust technique"
   d) repeat 15x
2) Followed by forced passive wrist extension for 30s
   - followed by the above-referenced wrist manipulation
3) Followed by wrist extension against resistance for 30s
4) Repeat steps 1-3 10x (takes a total of 15-20 min's)
Is manipulation more effective than physiotherapy for shoulder pain?

What percent of shoulder pain patients are symptom-free 2-3 years after undergoing manipulation vs. physiotherapy treatment?

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<th>Manipulation Patients</th>
<th>Physiotherapy Patients</th>
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<td>75%</td>
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<td>67%</td>
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Data taken from:

Treatment of shoulder complaints in general practice: long term results of a randomised, single blind study comparing physiotherapy, manipulation, and corticosteroid injection.

Winters JC, Jorritsma W, Groenier KH, Sobel JS, Jong BM, Arendzen HJ. BMJ 1999 May 22;318(7195):1395-6

Department of Family Practice, University of Groningen, Ant Deusinglaan 4, 9713 AW Groningen, Netherlands.
Treatment of shoulder complaints in general practice: long term results of a randomised, single blind study comparing physiotherapy, manipulation, and corticosteroid injection.

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Department of Family Practice, University of Groningen, Ant Deusinglaan 4, 9713 AW Groningen, Netherlands.

Study background: 172 unilateral shoulder pain pts (49 yoa, avg./56% female) were enrolled for the original study from 7 general medical care practices from 9-94 through 9-95. Pts had to have pain in the deltoid, AC joint, superior trapezius, and/or scapular area. Pain radiation into the arm was allowed, as was limited ROM of the upper arm and/or shoulder girdle. Pts w/ complaints d/“minor trauma” were included, but pts w/ a herniated cervical disc were not.

Diagnostic group assignment: Based onHX,PE, and response to 1 wk of NSAID tx (Voltaren), pts were allocated into 2 diagnostic groups:

1) “shoulder girdle” (58 pts):
- pain thought to arise from “functional disorders of the cervical spine, upper thoracic spine, or the upper ribs”.
- 3.5 wks of sx, avg.; 15/28 pain score, avg. (7 = no pain, 14 = mild, 21 = moderate, 28 = severe)

2) “synovial” (114 pts):
- pain thought to arise from “the synovial structures” (subacromial structures, AC joint, and/or glenohumeral joint).
- 7 wks of sx, avg.; 16/28 pain score, avg.

Pts were randomly assigned to various txs:

1) “shoulder girdle” pts:
   a) Physiotherapy (PT) - 2x/wk txs for 6 wks by a PT using “classic physiotherapy” (exercises, massage, and modalities; no mob./manip. techniques were allowed).
   b) Manual therapy (MT) - 1x/ wk txs for 6 wks by an MD or PT using mob./manip. of the cervical spine, upper thoracic spine, upper ribs, AC joint, and the glenohumeral joint. All of the manual therapists were graduates of the “Eindhoven course for manipulative therapy.”

2) “synovial” pts:
   a) Physiotherapy (PT) - same as above
   b) Manual therapy (MT) - same as above
   c) Corticosteroid injection (CI) - 1-3 injections (1.8, avg.) were given (at baseline, 1 wk later, and 3 wks later)

Long-term followup: Pts were sent a questionnaire 2-3 yrs after receiving the above-referenced tx. The questionnaire asked about their current and previous sx, further txs, etc.

40/58 (69%) of the “shoulder girdle” pts and 90/114 (79%) of the “synovial” pts responded.

Results (ns):

1) % who were free of their shoulder pain:
   a) “shoulder girdle” pts:
      PT - 41%, MT - 67%
   b) “synovial” pts:
      PT - 76%, MT - 73%, CI - 76%

2) % who felt “cured” (free of any significant sx):
   a) “shoulder girdle” pts:
      PT - 64%, MT - 78%
   b) “synovial” pts:
      PT - 81%, MT - 73%, CI - 76%

3) % who sought follow-up care:
   a) “shoulder girdle” pts:
      PT - 50%, MT - 33%
   b) “synovial” pts:
      PT - 31%, MT - 42%, CI - 26%

Conclusion: “In the long term no significant differences between the various treatment groups were found.” None of the differences reached statistical significance.
Is Manipulation Better Than Physiotherapy For Shoulder Pain?

What percent of patients with shoulder pain feel "cured" after 5 weeks of treatment?

- 70% of Manipulation Patients
- 10% of Physiotherapy Patients

Data taken from:
Comparison of physiotherapy, manipulation, and corticosteroid injection for treating shoulder complaints in general practice: randomised, single blind study.
Department of General Practice, University of Groningen, Netherlands.
Comparison of physiotherapy, manipulation, and corticosteroid injection for treating shoulder complaints in general practice: randomised, single blind study.

Department of General Practice, University of Groningen, Netherlands

Study background: 172 unilateral shoulder pain pts (49 yoa, avg./56% female) were enrolled for the study from 7 general medical care practices from 9-94 through 9-95. Pts had to have pain in the deltoid, AC joint, superior trapezius, and/or scapular area. Pain radiation into the arm was allowed, as was limited ROM of the upper arm and/or shoulder girdle. Pts w/ complaints d/t "minor trauma" were included, but pts w/ a herniated cervical disc were not.

Diagnostic group assignment: Based on HX,PE, and response to 1 wk of NSAID tx (Voltaren), pts were allocated into 2 diagnostic groups:
1) "shoulder girdle" (58 pts):
   - pain thought to arise from "functional disorders of the cervical spine, upper thoracic spine, or the upper ribs".
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2) "synovial" (114 pts):
   - pain thought to arise from "the synovial structures" (subacromial structures, AC joint, and/or glenohumeral joint).
   - 7 wks of sx, avg.; 16/28 pain score, avg.

Pts were randomly assigned to various txs:
1) "shoulder girdle" pts:
   a) Physiotherapy (PT) - 2x/wk txs for 6 wks by a PT using "classic physiotherapy" (exercises, massage, and modalities; no mob./manip. techniques were allowed).
   b) Manual therapy (MT) - 1x/wk txs for 6 wks by an MD or PT using mob./manip. of the cervical spine, upper thoracic spine, upper ribs, AC joint, and the glenohumeral joint. All of the manual therapists were graduates of the "Eindhoven course for manipulative therapy."

2) "synovial" pts:
   a) Physiotherapy (PT) - same as above
   b) Manual therapy (MT) - same as above
   c) Corticosteroid injection (CI) - 1-3 injections (1.8, avg.) were given (at baseline, 1 wk later, and 3 wks later)

Results (% of pts who felt "cured" (free of any significant sx)):
1) Shoulder girdle pts:
   a) after 3 wks of tx (ns): PT - 7%, MT - 45%
   b) after 5 wks (ss): PT - 10%, MT - 70%
   c) after 7 wks (ns): PT - 35%, MT - 85%
   *45% of PT pts dropped out d/t tx failure, whereas only 20% of MT pts dropped out.

2) Synovial pts:
   a) 3 wks (ns): PT - 8%, MT - 30%, CI - 58%
   b) 5 wks (ss): PT - 20%, MT - 40%, CI - 75%
   c) 7 wks (ns): PT - 36%, MT - 40%, CI - 85%
   *59% of MT pts dropped out d/t tx failure, 51% of PT pts, and 17% of CI pts.

Conclusion:
1) Shoulder girdle disorders: "Duration of complaints was significantly lower after manipulation [compared to PT]..." "...manipulation is to be preferred to physiotherapy for treating shoulder [girdle] complaints..."

2) Synovial disorders: "We found [corticosteroid] injection to be the most effective treatment for shoulder complaints originating from the synovial structures..."
How Much Does Manual Therapy Help Impingement Syndrome Of The Shoulder?

Percent decrease in shoulder pain following 6 treatment sessions of exercise or manual therapy + exercise

- Exercise: 35%
- Manual Therapy + Exercise: 70%

Data taken from:
Comparison of supervised exercise with and without manual physical therapy for patients with shoulder impingement syndrome.
Department of Medicine, Kaiser Permanente Medical Center, Vallejo, Calif. 94590, USA.
Comparison of supervised exercise with and without manual physical therapy for patients with shoulder impingement syndrome.

Department of Medicine, Kaiser Permanente Medical Center, Vallejo, Calif. 94590, USA. Mbang96@aol.com

Background: What are the most frequent causes of intrinsic shoulder pain? rotator cuff tendinitis and shoulder impingement syndrome (subacromial soft-tissues are encroached upon by the coracoacromial arch). 30% of such pts may eventually require surgery, although “therapeutic exercise has...long-term benefits for patients with shoulder impingement...”

Study background (a RCT): 52 subjects were studied (30 men, 22 women), 43 yoa, on avg., 5 mths of sx, on avg., with moderate shoulder pain thought to be due to impingement syndrome, rotator cuff tendinitis, or shoulder tendinitis.

Diagnostic criteria: 1) One of the following tests had to be painful (90% had both +): a) passive full shoulder flexion with overpressure (with the scapula stabilized), or b) passive internal rotation with shoulder abducted to 90° (in the scapular plane); 2) One of these tests had to be painful: a) active shoulder abduction (+ in 96%), or b) resisted break test in abduction, internal rotation, or external rotation.

Tx descriptions:
Both groups received 6 txs over 3 wks, 30-min. tx sessions (manual therapy pts did their stretches at home, exercise pts did their stretches with the PT), and all care was rendered one-on-one by experienced PT's who had "completed a 1-year full-time residency in advanced orthopedic manual therapy".

1) Exercise tx - "a standardized flexibility and strengthening program" consisting of: a) 2 stretches (1x/day - 3x30s, 10s between rep's): the wall "pec" stretch (abduct shoulder to 90°, put elbow against wall, rotate trunk contralaterally) and the cross-arm stretch (abduct shoulder to 90°, elbow to 90°, stretch arm across your body); b) 6 exercises (“the essential 'core exercises' of any shoulder rehab program”): 4 theratube exercises (1x/day - 3 sets of 10 rep's apiece with 60s rest between sets) - shoulder flexion, scaption (internally rotate shoulder, abduct to 90° in the plane of the scapula), rowing, and horizontal extension with external rotation; 2 regular exercises (1x/day - a max of 25 rep's) - seated press-ups and elbow push-ups.

2) manual therapy + exercise - exercise as described above + manual therapy “directed at relevant movement limitations found in the upper quarter.” Manual therapy consisted of: mobilization (up to grade 5) 1° directed at the shoulder, 2° directed at the shoulder girdle, C-T spine, and ribs; massage/stretching of key involved muscles; 1-2 home exercises to reinforce manual therapy (chin retractions, for ex.).

Results (1 mth after tx ended): "...there was significantly less pain in the manual therapy group..." vs. the exercise group: exercise - 35% less pain (557mm to 361mm on a VAS pain scale), manual therapy + exercise - 70% less pain (576 to 174).

Conclusion: Manual therapy + exercise “is superior to supervised shoulder exercise...for patients with shoulder impingement syndrome.”

Comments: How does it work? It might “reduce pain by stimulating joint mechanoreceptor activity...”, or it might stretch "shortened collagenous tissue..."