

## Is hand therapy more effective than usual care in maintaining function and improving coping in adults with hand arthritis?

### **Clinical Bottom Line**

We were unable to determine whether hand therapy is more effective than usual care in maintaining function and improving coping in adults with hand arthritis

### **Criteria for Critically Appraised Topic**

#### ***Population:***

Male and female adults – 18 years and over

#### ***Intervention:***

Hand therapy included:

- Massage
- Active/passive mobilisations
- Home exercise programme – stretching and strengthening

Any of the above used alone or in combination with splinting, joint protection, energy conservation or pacing

#### ***Comparison:***

Usual care included:

- No treatment
- Global advice and education
- Joint protection, splinting

#### ***Outcomes:***

##### ***Primary Outcomes:***

- Maintenance/improvement of function
- Improved coping strategies

##### ***Secondary outcomes:***

- Improved quality of life
- Reduction in pain/stiffness
- Improvement in grip strength
- Improvement in range of movement

#### ***Inclusions:***

Rheumatology, Hand(s), Scleroderma, Rheumatoid Arthritis (RA), Osteoarthritis (OA), Polymyalgia Rheumatica, Systemic Lupus Erythematosus (SLE), Gout, multi-joint problems plus hand involvement, complex hand conditions of variable nature, chronic/ongoing problems

#### ***Exclusions:***

Fractures, soft tissue injuries, surgical interventions e.g. Metacarpophalangeal joint replacement, Dupuytren's, Reflex Sympathetic Dystrophy (Complex Regional Pain Syndrome), acute conditions that improve/resolve, fibromyalgia, Carpal Tunnel Syndrome and Raynauds disease as single diagnoses

## **Search Terms used**

### ***Databases Searched:***

Cochrane	Pedro	PsychINFO	Medline
Clinical Evidence	Bandolier	NELH	Professional Websites
Clinical Guidelines	NICE	HTA	OT Seeker
Rehab Data	CINAHL	Embase	

### ***Types of study included:***

- Systematic reviews
- Randomised Controlled Trials (RCTs)
- Qualitative studies
- Patient satisfaction studies
- English language

### ***Key words searched:***

Hand arthritis	Hands	Hand therapy	Occupational Therapy	Physiotherapy
Physical Therapy	Rheumatology	RCT	Systematic Review	Qualitative Study
Patient Satisfaction	Coping	Function	Range of Movement	Grip
Strength	Passive Movement	Active Movement	Splinting	Joint Protection
Energy Conservation	Pacing	Hand Rehabilitation	Pain	Stiffness
Massage	Mobilisation	RA	OA	Scleroderma
SLE	Scleroderma	Polymyalgia	Gout	CTS
Raynaud's				

### ***Time Frame:***

Search for the past 10 years i.e. 1995 – 2005

## Available Evidence

Database Searched (Specific to CAT)	Number of abstracts	Number of Relevant Abstracts
Cochrane	0	0
Pedro	0	0
Medline	44	4
CINAHL	13	1
Embase	10	1
Clinical Evidence	0	0
PyschINFO	0	0
OT Seeker	0	0
Bandolier	0	0
<b>Total</b>	<b>67</b>	<b>6</b>

### Results:

The initial search identified 67 abstracts appropriate to the question. On review of these, only six papers were highlighted that could potentially answer the CAT. The six papers were then reviewed by the group using the identified search strategy and reduced to three papers. These three papers were then assessed for quality and appropriateness to the CAT using the CASP (Critical Appraisal Skills Programme) Checklist, group discussion and consensus.

## **Articles assessed:**

1. **Physical and Exercise Therapy for Treatment of the Rheumatoid Hand  
Buljina et al, 2001**

The objective of this study was to evaluate the short-term effectiveness of physical therapy (ice massage or wax packs, thermal baths, faradic hand baths and exercise therapy) on the rheumatoid hand.

Although this paper included some of our primary and secondary outcomes there were limitations in the design, for example, it was unclear whether participants were randomised or whether allocation was concealed, which may have led to bias in the findings. Only short term outcome was assessed and this was at three weeks.

2. **The Effectiveness of Hand Therapy Exercises for Persons with Rheumatoid Arthritis- A Systematic Review  
Wessel, 2004**

Although this review was eligible to answer our CAT, only two out of the nine studies reviewed addressed function as an outcome and the sample sizes in the majority of studies were small. The evidence described was conflicting regarding improvement in grip strength and range of movement. The review did not describe the criteria used to evaluate the quality of the included studies.

3. **Joint Protection and Home Exercises Improve Hand Function in Patients with Hand Osteoarthritis: A Randomized Controlled Trial  
Stamm et al, 2002**

The objective of this RCT was to determine the effectiveness of joint protection and home exercises on the hand function of patients with hand OA over a 3-month period. The primary outcome was grip strength with secondary outcomes included the Health Assessment Questionnaire (HAQ) and self-reported Visual Analogue Scale (VAS) for pain and global hand function. The study had a small sample size (n=20 for each arm).

## **Implications for practice**

From the analysis of the above papers we were unable to answer our question “Is hand therapy more effective than usual care in maintaining function and increasing coping in adults with hand arthritis?”

There is limited evidence to make a judgement on the effectiveness of hand therapy in arthritis. There is no evidence to suggest a benefit of hand therapy in increasing function in patients with RA. However, one paper (Stamm et al, 2002) seems to suggest increased function in relation to grip strength and improvement in self-perceived global hand function with joint protection and exercise in hand OA. The study by Stamm et al (2002) is however limited by its sample size and the effectiveness of joint protection and hand exercise in OA warrants further investigation. In collaboration with the research team in the Primary Care Musculoskeletal Research Centre, we are now developing a larger study to evaluate this. The group felt that the home exercise programme described by Stamm et al (2002) provides a useful general exercise programme to

use in clinical practice with patients with hand arthritis. This programme is described in appendix 1.

Since completing this CAT we identified a study demonstrating the benefits of brief joint protection advice and hand strengthening exercises in improving function in adults with hand problems and rheumatoid arthritis (RA) (O'Brien et al, 2005). This study was also limited by a small sample size (n<25 in any one treatment arm) however the exercise and advice programme described provides an additional useful approach in clinical practice with patients with rheumatoid arthritis (appendix 2).

## **References**

Buljina A I, Taljanovic M S, Dijana M A, Hunter T B. Physical and Exercise Therapy for Treatment of the Rheumatoid Hand. *Arthritis Care & Research* 2001; 45:392-97

Wessel J. The Effectiveness of Hand Exercises for Persons with Rheumatoid Arthritis – A Systematic Review. *Journal of Hand Therapy* 2004; 17: 174-180.

Stamm T A, Machold K P, Smolen J S, Fischer S, Redlich K, Graninger W, Ebner W, Erlacher L. Joint Protection and Home Exercises Improve Hand Function in Patients with Hand Osteoarthritis: A Randomized Controlled Trial. *Arthritis and Rheumatism* 2002; 47: 44-49.

O'Brien A, Jones P, Mullis R, Mulherin D, Dziedzic K. (2005). Conservative hand therapy treatments in Rheumatoid Arthritis (RA) - A randomised controlled trial. *Rheumatol Epub ahead of print* Nov 30 0:2151

## **Exercises for Patients with Hand Arthritis**

- 1. Make a fist**
- 2. Make a small fist (flexing PIP and DIP joints only)**
- 3. Flex the MCP joints whilst keeping PIP and DIP joints stretched (extended)**
- 4. Touch the tip of each finger with the tip of the thumb whilst keeping each finger flexed**
- 5. Spread the fingers as far as possible with the hand lying flat on a table**
- 6. Push each finger in the direction of the thumb with the hand lying flat on a table**
- 7. Touch the fifth MCP joint with the tip of the thumb**

## Appendix 2

SAUNDERS  
EXERCISES  
EXPRESS™ 2.0  
EXERCISE SOFTWARE

# MidStaffordshire General Hospitals Trust Physiotherapy Department, CCH

Provided for : Hand exercises - Research

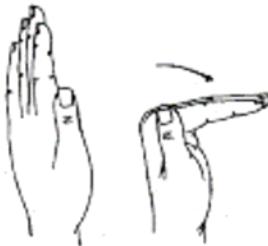
Provided by : Physiotherapy Department

Date : 09/04/99



1. Begin with the palm of your hand flat on the table or over the edge of the table if this is not possible.
2. Keep palm on table but lift index finger up off table by 1cm.
3. Hold for 5 seconds keeping the other fingers flat on the table.
4. Now lift the same finger towards your thumb without letting it rest back on the table and hold for another 5 seconds before resting.
5. Repeat for each finger of both hands as directed by the main instruction sheet twice per day.

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1. Rest your elbows comfortably on the table.
2. Bend knuckle joints of all your fingers down as shown.
3. Keep the other joints of your fingers straight.
4. Hold for 5 seconds.
5. Repeat as directed by your main instruction sheet twice per day.

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1. Bend first two joints of all your fingers down as shown until you feel a stretch.
2. Hold for 5 seconds then relax and straighten the fingers out again.
3. Repeat for each hand as directed by the main instruction sheet twice per day.

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1. Pinch your thumb and first finger together as shown making sure the joints stay slightly bent.
2. Hold for 5 seconds pressing firmly.
3. Repeat with other fingers starting with the middle, ring and then little fingers.
4. Repeat 10 times for each finger of each hand twice per day.

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1. Still sitting with your forearms supported on a table.
2. With your palms facing up, move your thumb tip to touch your little finger tip. Now slowly slide it down to touch the palm or as far as you can and hold for 5 seconds.
3. Now slide the thumb down the ring, middle and then index finger in turn from the tip to the palm and hold for 5 seconds.
4. Allow the thumb to bend in the middle joint as much as possible.
5. Repeat for each finger 10 times, twice per day.

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1. Place your hand onto a slightly damp hand towel with your fingers spread apart.
2. Squeeze fingers together bunching up the towel between your fingers.
3. Allow your knuckles to bend in the middle but keep your fingers as straight as you can.
4. Hold for 5 seconds and then relax your fingers.
4. Repeat as directed on your main instruction sheet twice per day.

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1. Loop rubber band around fingers as shown.
2. Separate your fingers slowly until you get a tension in the band. You may allow your knuckles to bend a little as you do the exercise.
3. Hold for 5 seconds, then relax.
4. Repeat as directed by the main exercise sheet twice per day.

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1. Sit with your forearm supported as shown gripping the elastic tubing.
2. Hold the loose end of the elastic tubing with your other hand to apply resistance.
3. Curl wrist slowly upward as far as you can keeping your forearm still in contact with the table until you feel a comfortable resistance.
4. Hold for 5 seconds then slowly lower.
5. Repeat as directed by the main instruction sheet twice per day.

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## Hand Exercises - Home Instructions

Name.....

The exercises are all described on the sheets. If you have any queries about how to do them, please contact Jill Spicer on 01543 576418.

### How often do I have to do the exercises?

All exercises are to be performed twice a day.

### How many exercises do I have to do?

The number of exercises to do may be stated on the sheet or may say refer to the instruction sheet. If so please follow this table:-

<u>Week of Study</u>	<u>Number of repetitions of exercise</u>
Week 0 to Week 4	Repeat x 5, hold for 5 seconds
Week 5 to Week 8	Repeat x 10, hold for 5 seconds
Week 9 to Week 12	Repeat x 20, hold for 5 seconds
Week 13 to Week 24	Repeat x 20, hold for 5 seconds

### Is there anything else I have to do apart from the exercises?

Yes!

Complete your exercise diary every day and make a note if you have any difficulty or are unable to do an exercise for any reason.

### What do I do if I get any pain?

If you experience any pain/discomfort you may wonder what to do.

- First check if you have done anything unusual with your hands over the previous day. Maybe you have over-strained them without being aware at the time. This should settle in a day.

- Do all the exercises within your limit of discomfort. All exercises are difficult at first because our joints and muscles may not be used to being stretched so far and may be weak, but decide if what you are feeling is discomfort ( muscle ache from exercise and stretching of muscles) or joint pain.
- If it is joint pain or your joints feel more hot or swollen than usual take a rest from the exercises for that day.
- If you feel you can't do an exercise one particular day, or all of them, please note this in your exercise diary for every day this may be applicable.
- If your hand/finger pains start during the exercises, rest for half an hour and then try again.
- If after 2 hours the pains still remain then leave the exercises until the next day.
- If the pains last until the next day, leave the exercises for that day, but try again the following day.
- If you are still in pain after 2 days since starting the exercises, stop the exercises, make a note in your exercise diary and contact your GP. Please also inform the investigator on Tel: 01543 576411 (Anne Chadwick).
- If the pain settles again restart the exercises.

If you still have questions relating to your exercises please contact either Jill or myself and we will get back to you as soon as possible.

**Thank you** once again for your help in this research.

*Anne Chadwick - Investigator :- Tel No 01543 576411.*