STRATEGIES TO PROTECT YOUR THUMBS FROM THE EFFECTS OF BASAL JOINT ARTHRITIS

Lisa M. Cyr, OTD, OTR/L, CHT
Table of Contents:

- Slides 3-10: Background on basal joint arthritis, who gets it, and potential causes
- Slides 11-16: Basic skeletal and muscular anatomy
- Slides 17-23: Joint protection strategies, ergonomic suggestions, adaptive equipment ideas
- Slides 24-41: Home exercise program
- Slide 42: Orthoses (Splints/Braces)
- Slide 43: X-ray of the disease process
- Slide 44: Summary
- Slide 45: Helpful resources
- Slides 46-48: Definitions
- Slides 49-51: Reference list
The following information is designed to:

- Decrease pain
- Improve function
- Prevent the progression of arthritic changes at the joint at the base of your thumb
- Allow you to continue to participate in the activities most important to you!
This can be accomplished with:

* Joint protection techniques
* Adaptive equipment
* Thumb muscle strengthening
* Temporary use of a protective orthosis

Basal Joint Arthritis:

Pain at the base of the thumb where the thumb meets the wrist

regenexx.com

summitortho.net

ProtectYourThumbs.com
Also known as degenerative joint disease (DJD) or carpometacarpal (CMC) arthritis.
Who is at risk for basal joint arthritis?

• 1 in 4 women  
  (Armstrong, Hunter, & Davis, 1994)
  • especially after menopause
  • evidence shows up to 75% of women over 70 have pain and limited motion associated with arthritis in one or more joints of the hand  
  (Kjeken et al. 2005)

• 1 in 12 men
  • it’s likely that it occurs more often but isn’t reported because people deal with it on their own and don’t seek medical attention
Thumbs contribute **40%-60%** of the use of our hands and allow us to complete both delicate and forceful tasks.

(Dickson, & Morrison, 1979)
Potential Causes of Basal Joint Arthritis:

- Cumulative trauma from repetitive tasks
- Injury
- Repeated forceful pinching
5# PINCH AT THE THUMB TIP CAN CREATE OVER 25# OF FORCE AT THE CMC JOINT,! (COONEY, 1981)
The thumb has 3 joints:
It may be a fun party trick, but try to avoid purposefully hyperextending your MCP joint:

People who are “double jointed” are actually hypermobile, which means the stabilizing ligaments are loose. When this occurs at the MCP joint it may increase risk for developing arthritis at the cmc joint (Moulton, Parentis, Kelly, Jacobs, Naidu, Pellegrini. (2001); Koff, Ugwonali, Strauch, Rosenwasser, Ateshian, & Mow. (2003) Cooney & Chao. (1981)

Example of hyperextension of the MCP joint
Thumb motion and function is accomplished by a complex balance of the different muscles that control the thumb and index finger.

In a normal thumb, these muscles work together to move the thumb correctly with precision.
Many muscles are involved in moving the thumb in different directions. When there is basal joint arthritis, the muscles become unbalanced causing abnormal movement patterns.

Extensor pollicis longus
Extensor pollicis brevis
Flexor pollicis longus
Flexor pollicis brevis
Adductor pollicis interosseous
Abductor pollicis brevis
Opponens pollicis
1st dorsal

An imbalance in the muscles creates uneven pressure at the cmc joint.

This causes changes to the cartilage that covers the bones (= osteoarthritis).

= more muscle imbalance as the joint shifts position.

= pain, loss of motion and loss of function.
This muscle imbalance can cause a normal thumb to become deformed and painful.
Joint Protection Principles

- Use larger, stronger joints when able:

Use a shoulder bag rather than a clutch purse to avoid pinching motions.
Writing

• Large diameter pens
• Pen grips
• Felt tip or gel pens

All require less pressure to write
Choose options to protect your joints when given a choice:

Click on a water bottle to start a video clip

Protect your thumbs and the environment!
THERE ARE MANY NEW TOOLS FOR THE KITCHEN AVAILABLE AT STORES THAT SELL KITCHEN SUPPLIES

Large diameter handles help decrease force on the thumb

These handles allow you to grip with your fingers instead of your thumb

This breaks the seal on a new jar to open it effortlessly

These make it easier to open different size bottles

Electric can openers are helpful

images.businessweek.com
wrightstuff.biz
goldviolin.com
beabletodo.com
ProtectYourThumbs.com
Ergonomic garden tools minimize force on the thumb
USE ADAPTIVE EQUIPMENT TO DECREASE FORCE ON YOUR THUMBS

Lever doorknobs are trendy and require much less force than turning a doorknob.

Bookstands eliminate the need to hold a book for prolonged period of time.

Magnetic jewelry clasps make it easier to apply a necklace.

Easy grip toenail clippers require less force and can be squeezed with your fingers instead of your thumb.
Double click each picture for video:

Spring loaded scissors

Large diameter pan scrubber
Thumb Exercise Program

- None of these should increase pain!

- Start with ~10 repetitions each 2-3x/ day

- Gradually increase repetitions to 20 and use more pressure as long as *NO increase in pain*

- Proper form is very important to make sure the correct muscles are being strengthened
The goal of this exercise program is to strengthen the muscles around the base of your thumb as well as a thumb stabilizer muscle of the index finger.

Abductor pollicis brevis
Extensor pollicis brevis
Flexor pollicis brevis
Opponens pollicis
1st dorsal interosseous
Tightness of the adductor pollicis muscle is a very common complication with basal joint arthritis.

It’s important to try to help soften this muscle before you do the strengthening exercises.

This will make the exercises more effective.
Tightness of this muscle prevents us from moving the thumb away from the index finger normally. This can create abnormal hyperextension motion at the MCP when you attempt to grasp a larger object such as a coffee mug (or an extra large water bottle).
Deep pressure or massage to this muscle is very important before completing other exercises

Apply firm pressure with your other hand or apply a large clip for 30 seconds to 5 minutes:

Then use your other hand to try to open the CMC joint wider.

Be careful not to overstretch the MCP joint further
Click on the link below for a video demonstrating the proper technique to soften the adductor pollicis muscle

ProtectYourThumbs.com
Some people also get relief by gently pulling (distracting) the thumb, as if trying to make it longer. This helps to re-position the bones in better alignment.

- Placing your hand palm down, then sitting on it may also provide pain relief.
Re-teach your thumb muscles how to work correctly by going through the next 5 exercises in a PAIN FREE manner.
Palmar abduction: abductor pollicis brevis muscle

Try to form the letter “C” with your thumb and fingers

Keep a slight bend in the mcp and ip thumb joints
Click on the picture below for a video demonstrating the proper technique to activate the abductor pollicis brevis muscle.
Radial abduction: extensor pollicis brevis muscle

First pull your thumb away from your index finger to make an “L”

Then try to pull thumb backward so it is in line with your fingers

Keep the ip joint of your thumb semi- bent in order to help isolate the muscle we are trying to strengthen
Click on the picture below for a video demonstrating the proper technique to activate the extensor pollicis brevis muscle
Opposition: opponens pollicis muscle

Try to form the letter “O” with your thumb and each fingertip one at a time

- Apply light pressure as long as you stay pain-free and can maintain the slight bend in the thumb joints

- Sometimes it helps to use your other hand to position your thumb in this “O”, then try to hold it there for 3-5 seconds

This demonstrates a collapse of the mcp joint. It is important that you try to prevent this from happening since it reinforces the muscle imbalance.
Click on the picture below for a video demonstrating the proper technique to activate the opponens pollicis muscle.
MCP flexion: flexor pollicis brevis muscle

Bend your thumb across your palm toward the bottom of your pinky finger.

Try to keep your thumb tip (ip joint) straight

You can use also your other hand to give light resistance as shown here:
Click on the picture below for a video demonstrating the proper technique to activate the flexor pollicis brevis muscle.
Index finger abduction: first dorsal interosseous

Place palm flat on table, slide your index finger away from the middle finger.

Use your other hand or a thin rubber band to apply resistance to this motion.

Make sure to keep fingers flat on the table to prevent other muscles from taking over.
Click on the picture below for a video demonstrating the proper technique to activate the 1\textsuperscript{st} dorsal interosseous muscle
IF YOUR THUMB PAIN PERSISTS OR INCREASES, SEEK MEDICAL ATTENTION!

Ask your doctor for a referral to a **certified hand therapist (CHT)**.

She/he can provide you with a custom formed or pre-fabricated orthosis.

These temporarily rest the joint, and help to decrease pain at the cmc joint by immobilizing it.

Examples of orthoses: (splints/ braces)

The goal is to wean out of the orthosis as pain decreases.
This series of x-rays shows the progression of basal joint arthritis

Stage 1 is very early in the disease process so the cmc joint still looks almost normal. By stage IV, there is no joint space left and it is difficult to reverse the pain and loss of function without surgery in most cases.
The techniques presented here show different methods to help protect your thumbs.

Doing some parts of this program is good, doing more of it is great and may help you avoid becoming one of the 1 in 4 women who develop basal joint disease.

- This will allow you use your hand normally for the things you want to do.

- This program may also help delay the very common problem of basal joint arthritis from developing, and ultimately reduce the need for surgery that many women face as they age.
Helpful Resources

- American Occupational Therapy Association; www.AOTA.org
- American Society of Hand Therapists; www.ASHT.org
- American Physical Therapy Association www.APTA.org
- American Association of Hand Surgeons ; www.handsurgery.org
- American Society of Surgery of the Hand; www.ASSH.org
- Arthritis Association; www.Arthritis.org

- Lisacyr.cht@gmail.com
What is Occupational Therapy?

“Occupational therapy is a skilled health, rehabilitation, and educational service that helps people across the lifespan participate in the things they want and need to do through the therapeutic use of everyday activities (occupations) (AOTA.org).

Some common examples of daily occupations include:

- Bathing and dressing,
- Meal preparation, eating, washing dishes
- Writing or using the computer
- Working, and all the duties associated with your particular job
- Exercise, hobbies, sports, leisure activities
- Driving or using public transportation
- Any activity that is important to you!
What is Occupational Therapy?

“It is covered by private insurance, Medicare, Medicaid, workers’ compensation, vocational programs, behavioral health programs, early intervention, and school programs. Services also may be covered through Social Security, state mental health agencies or those serving individuals with intellectual impairment, health and human services agencies, private foundations, and grants. Many providers accept private payments.” (AOTA.org)
Prevention strategies such as these are an integral element of the American Occupational Therapy Association’s (AOTA) Centennial Vision:

“to promote occupational therapy’s practice of enabling people to improve their physical and mental health, secure well-being and enjoy higher quality of life through preventing and overcoming obstacles to participation in the activities they value.”

(AOTA, 2007a, p. 613).
What is Hand Therapy?

- “Hand Therapy is a type of rehabilitation performed by an occupational or physical therapist on patients with conditions affecting the hands and upper extremities.

- Such therapy is performed by a provider with a high degree of specialization that requires continuing education and, often, advanced certification.

- This enables the hand therapist to work with patients to hasten their return to a productive lifestyle.” (ASHT.org)


Feedback Survey

1. This program helped me understand why I have thumb pain:
   - strongly agree
   - agree
   - disagree
   - strongly disagree

2. This program explained the purpose of wearing a supportive orthosis:
   - strongly agree
   - agree
   - disagree
   - strongly disagree

3. This program helped me understand some ways to protect my thumb joints:
   - strongly agree
   - agree
   - disagree
   - strongly disagree

4. This program showed me helpful exercises to help prevent arthritis pain and deformities from worsening:
   - strongly agree
   - agree
   - disagree
   - strongly disagree

5. Overall this program seems like something I can add to my daily routine:
   - strongly agree
   - agree
   - disagree
   - strongly disagree