

Musculoskeletal Disorders and the Percussionist

By Dr. James T. Lindroth

Musculoskeletal disorders (MSDs) are a serious issue to the health of a percussionist. An estimated one in two adults in the United States is affected by MSDs. According to the United States Bone and Joint Initiative, approximately \$322 billion were spent on treating MSDs in 2012-14. Major contributing factors for developing MSDs are sustained or awkward postures, repetitive motions, forceful exertions, hand-arm vibration, all-body vibration, and mechanical compression.

Based on these factors, percussionists should become familiar with MSDs, as these disorders can have a significant impact on performing careers. This article aims to describe various MSDs and offer general feedback on the prevention of these disorders.

COMMON MUSCULOSKELETAL DISORDERS

The following are the most common musculoskeletal issues facing percussionists:

- **Bursitis:** Inflammation of a bursa, typically located in the knee, elbow, or shoulder.
- **Carpal Tunnel Syndrome:** A painful condition of the hand and fingers caused by compression of a major nerve where it passes over the carpal bones through a passage at the front of the wrist, alongside the

flexor tendons of the hand. It may be caused by repetitive movements over a long period and characterized by sensations of tingling, numbness, or burning.

- **Cubital Tunnel Syndrome:** Also referred to as ulnar nerve entrapment, this condition is caused by the increased pressure on the ulnar nerve (the nerve located alongside the ulna bone). The ulna bone is one of two bones that give structure to the forearm, located on the pinky finger side of the forearm. It joins with the humerus on its larger end to make the elbow joint, and it joins with the carpal bones of the hand at its smaller end. The path along the cubital tunnel is obstructed, thus causing the syndrome. It often leads to the sensations of pins or needles in a person's fingers.
- **DeQuervain's Tenosynovitis:** A painful condition affecting the tendons on the thumb side of your wrist. This condition makes it difficult to turn your wrist or grasp a stick or mallet.
- **Myofascial Pain Syndrome:** Pressure on sensitive points in your muscles, also called trigger points, that cause pain in seemingly unrelated parts of your body.
- **Neuropathies:** "Neuropathy" is a general medical term that refers to issues of the nerves. Neuropathies

are classified by the types or locations of the nerves they affect. Focal neuropathies are those focused on one nerve or group of nerves within a particular area of the body. Symptoms usually appear suddenly and can include pain; sensory disturbances, such as numbness, tingling, "pins of needles" sensations, burning, or even itching; and weakness. In the case of bodily extremities, the pain may occur at the site of nerve compression or entrapment.

- **Tendinitis:** Inflammation of a tendon, which causes pain outside of any joint in your body.
- **Trigger finger (or thumb):** A defect in a tendon causing a finger to jerk or snap straight when the hand is extended.

PREVENTION TIPS

The implementation of an effective ergonomic approach to practice and performance, healthy lifestyle, and supportive environments can help with the prevention of MSDs. The following suggestions are designed to help the percussionist develop a pro-active plan to mitigate risk factors of MSDs.

Education. Keep yourself informed about the various MSDs and how they can affect you.

Performance Technique. Many percussionists develop MSDs because of bad technique. Evaluate your technique

to ensure proper posture, body movements, and eliminate unneeded stress on bones, joints, tendons, and muscles.

Warm Up. Warm up before practice sessions and performances. Warming up should include stretching and playing exercises to loosen up body mechanics.

developing a serious condition. For the older performer, they can prevent or quickly treat any injuries before they become career-ending events. For younger performers, this knowledge can prevent potentially serious injuries from happening and worsen as they age. Taking

MSDs can hinder or even end performing careers.

Prepare yourself mentally as well by setting goals and getting focused before you begin your session.

Listen to Your Body. Pain is your body telling you that something is wrong. Pay attention to physical pain and make rational decisions to decrease the likelihood of increased damage. The phrase "no pain, no gain" has never served percussionists well. Document where you have pain, how long you have it, and keep track of the intensity.

Pace Yourself. Be smart when practicing. Practice the way you plan to perform. It will better prepare your body for demanding performances down the road. Be sure to take plenty of short breaks to allow your body and mind to relieve stress and tension.

Healthy Lifestyle. It is important to keep yourself in good physical condition. Other risks that can impact musculoskeletal complaints are age, gender, obesity, smoking, drug abuse, and pre-existing conditions. Eat well and be sure to get plenty of rest to perform at your best.

Medical Attention. Healthcare professionals can help diagnose MSDs and provide an appropriate treatment plan to help you recover. Many percussionists have received positive results with physical therapy and activities to help heal and strengthen the body, such as yoga or Tai Chi.

MSDs can hinder or even end performing careers. However, with knowledge and pro-active actions, one can prevent these issues from occurring or

the time to educate, develop awareness of MSD's symptoms, and put into action a prevention plan will help an individual enjoy performing music over a lifetime.

Dr. James T. Lindroth is Associate Professor of Music Education at Northeastern State University, where he serves as the Percussion Chair and Coordinator of Music Education. Dr. Lindroth earned his Ph.D. in Music Education from the University of South Florida, and a Master of Music degree in Music Performance and Bachelor of Music degree in Music Education from the University of Massachusetts, Lowell. He is an active performer and recording artist. Dr. Lindroth is in demand as an adjudicator and is a member of the Central States Judges Association. He is a member of the Vic Firth Education Team and serves on the PAS Health and Wellness Committee. Dr. Lindroth's scholarly research has been published in regional and national peer reviewed journals, and he has presented research and workshop sessions at music conferences in the United States and internationally.

Lateral Epicondylitis (Tennis Elbow) Rehabilitation Exercises

You may do stretching exercises 1 through 3 right away. You may do strengthening exercises 4 through 6 when stretching is nearly painless.

1. Wrist range of motion: Bend your wrist forward and backward as far as you can. Repeat 10 times. Do 3 sets.



Wrist range of motion

2. Forearm range of motion: With your elbow at your side and bent 90 degrees, bring your palm facing up and hold for 5 seconds then slowly turn your palm facing down and hold for 5 seconds. Repeat 10 times. Do 3 sets. Make sure you keep your elbow bent at 90 degrees throughout this exercise.



Forearm range of motion

3. Elbow range of motion: Gently bring your palm up toward your shoulder and bend your elbow as far as you can. Then straighten your elbow out as far as you can. Repeat 10 times. Do 3 sets.



Elbow range of motion

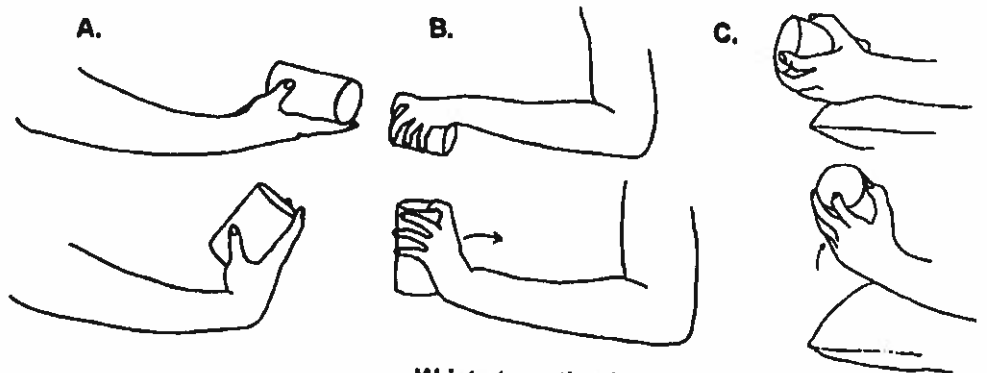
4. Wrist strengthening:

A. Wrist flexion: Holding a soup can or hammer handle with your palm up, slowly bend your wrist up. Slowly lower the weight and return to the starting position. Repeat 10 times. Do 3 sets. Gradually increase the weight of the can you are holding.

B. Wrist extension: Holding a soup can or hammer handle with your palm down, gently bend your wrist up. Slowly lower the weight and return to the starting position. Repeat 10 times. Do 3 sets. Gradually increase the weight of the can you are holding.

C. Wrist radial deviation: Hold your wrist in the sideways position with your thumb up. Hold-

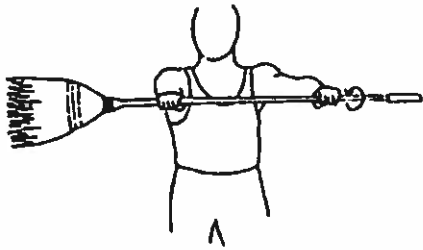
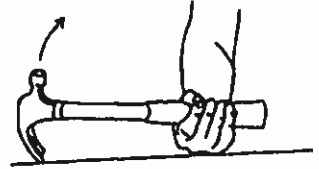
ing a can of soup or hammer handle, gently bend your wrist up with your thumb reaching towards the ceiling. Slowly lower to the starting position. Do not move your forearm throughout this exercise. Repeat 10 times. Do 3 sets.



Wrist strengthening

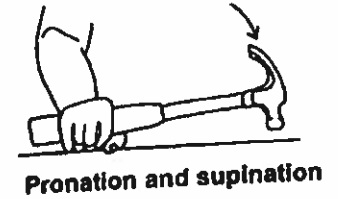
Lateral Epicondylitis (Tennis Elbow) Rehabilitation Exercises

5. Pronation and supination: Hold a soup can or hammer handle in your hand, with your elbow bent 90 degrees. Slowly rotate your hand with palm upward and then palm down. Repeat 10 times. Do 3 sets.



Wrist extension

6. Wrist extension: Stand up and hold a broom handle in both hands. With your arms at shoulder level, elbows straight and palms down, roll the broom handle backward in your hand as if you are reeling something in using the broom handle. Repeat for 1 minute and then rest. Do 3 sets.



Pronation and supination

Medial Epicondylitis (Golfer's Elbow) Rehabilitation Exercises

You may do stretching exercises 1 through 3 right away. You may do strengthening exercises 4 through 6 when stretching is nearly painless.



Wrist range of motion

1. Wrist range of motion: Bend your wrist forward and backward as far as you can. Do this 10 times. Do 3 sets.

2. Forearm range of motion: With your elbow at your side and bent 90 degrees, bring your palm facing up and hold for 5 seconds. Slowly turn your palm facing

down and hold for 5 seconds. Repeat this 10 times. Do 3 sets.

Make sure you keep your elbow bent at 90 degrees throughout this exercise.



Forearm range of motion

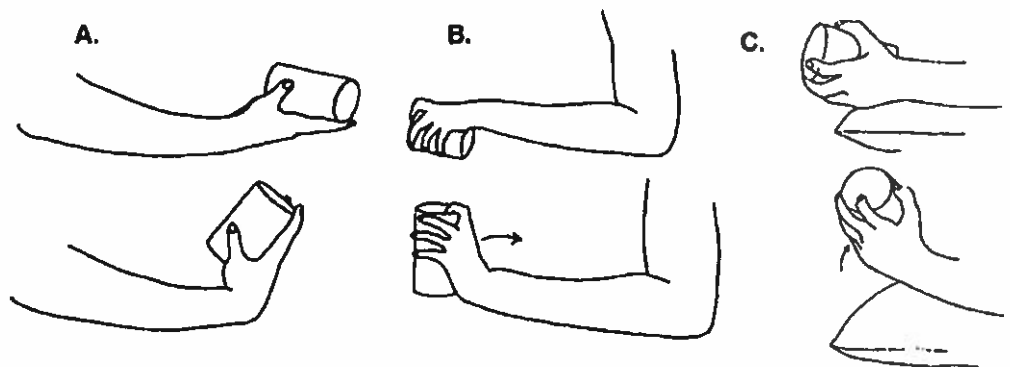
3. Elbow range of motion: Gently bring your palm up toward your shoulder and bend your elbow as far as you can and then straighten your elbow out as far as you can 10 times. Do 3 sets.

4. Wrist strengthening:

A. Wrist flexion: Hold a soup can or hammer handle with your palm up. Slowly bend your wrist up. Slowly lower the weight and return to the starting position. Repeat this 10 times. Do 3 sets. Gradually increase the weight of the can you are holding.

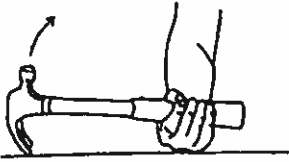
B. Wrist extension: Hold a soup can or hammer handle with the palm down. Gently bend your wrist up. Slowly lower the weight and return to the starting position. Repeat this 10 times. Do 3 sets. Gradually increase the weight of the can you are holding.

C. Wrist radial deviation strengthening: With your wrist in the sideways position and your thumb up, hold a can of soup or hammer handle. Gently bend your wrist up with your thumb reaching towards the ceiling. Slowly lower to the starting position. Do not move your forearm throughout this exercise. Repeat 10



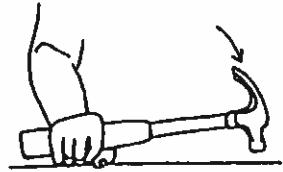
Wrist strengthening

Medial Epicondylitis (Golfer's Elbow) Rehabilitation Exercises

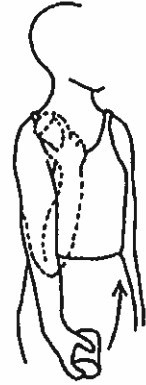


Pronation and supination

5. Pronation and supination strengthening: Hold a soup can or hammer handle, with your elbow bent 90 degrees. Slowly rotate your hand with palm upward and then palm down. Repeat this 10 times. Do 3 sets.



6. Elbow flexion and extension: Hold a can of soup with your palm face up. Slowly bend your elbow so that your hand is approaching your shoulder and then lower it down slowly so your elbow is completely straight. Repeat this 10 times. Do 3 sets. Slowly increase the weight are using.



Elbow flexion and extension

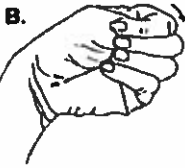
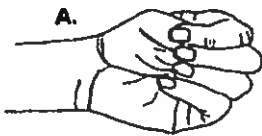
De Quervain's Tenosynovitis Rehabilitation Exercises

You may do all of these exercises when the initial pain is gone.

1. **Opposition stretch:** Rest your injured hand on a table, palm up. Touch the tip of your thumb to the tip of your little finger. Hold this position for 6 seconds. Repeat 10 to 12 times.



Opposition stretch

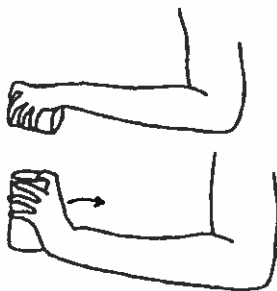


Wrist rock

2. **Wrist rock stretch:** Hold your injured hand out in front of you in the handshake position. Make a fist with your injured hand, but tuck your thumb inside your palm. Move your wrist down, hold for 5 seconds, then move your wrist up and hold for 5 seconds. Repeat 10 to 12 times.



Thumb extension



Wrist extension

3. **Thumb extension:** Hold a small weight (a soup can, for example) in your injured hand. Rest your forearm on a table with your wrist and hand hanging over the edge of the table. Starting with your hand in the handshake position (thumb up), move your wrist up and down. Repeat 10 to 20 times.

4. **Wrist extension:** Start in the same position as for the thumb extension (holding a small weight, resting your forearm on the table), but this time turn your hand palm down. Bend your wrist up, hold for 2 to 3 seconds, then bend your wrist down and hold for 2 to 3 seconds. Repeat 10 to 20 times.



Finger spring

5. **Palm-down curl:** Stand with your hands at your side, holding a small weight palm down in your injured hand. Keeping your palm down and bending your elbow, slowly curl the weight up toward your shoulder as far as possible. For each repetition, move your hand down to the starting position more slowly than you lift your hand up toward your shoulder. Repeat 10 to 20 times.



Palm-down curl

6. **Finger spring:** Place a large rubber band around the outside of your thumb and the rest of your fingers. Open your fingers to stretch the rubber band. Repeat 10 to 20 times.

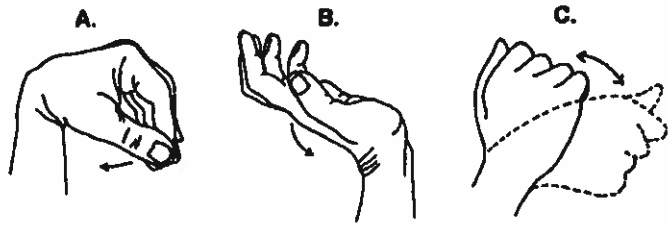
Wrist Tendonitis Rehabilitation Exercises

1. Active range of motion

A. Flexion (forward bending): Gently try to bend your wrist forward. Hold for 5 seconds. Repeat 10 times. Do 3 sets.

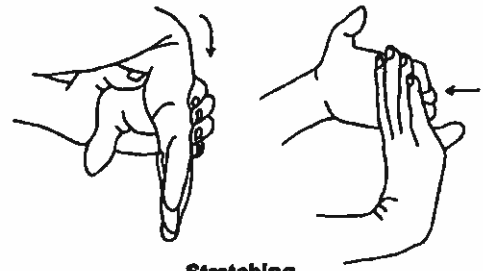
B. Extension (backward bend): Gently bend your wrist backward. Hold this position for 5 seconds. Repeat 10 times. Do 3 sets.

C. Side to side: Gently move your wrist from side to side, holding it for 5 seconds at each end. Repeat 10 times. Do 3 sets.



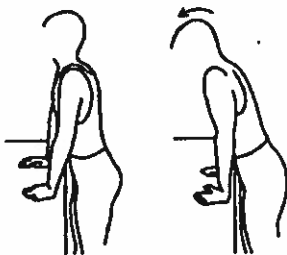
Active range of motion

2. Stretching: With your uninjured hand, help to bend your wrist down by pressing the back of your hand and holding for 15 to 30 seconds. Next, stretch it backward by pressing the fingers in a backward direction and holding for 15 to 30 seconds.



Stretching

3. Wrist extension stretch: Stand at a table with your palms down, fingers flat, and elbows straight. Lean your body weight forward. Hold this position for 15 to 30 seconds.



Wrist extension stretch

4. Wrist flexion stretch: Stand with the back of your hands on a table, palms facing up, fingers pointing toward your body, and elbows straight. Lean away from the table. Hold this position for 15 to 30 seconds.



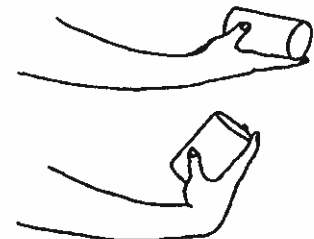
Wrist flexion stretch

5. Pronation and supination of the forearm: With your elbow bent 90 degrees, turn your palm upward and hold for 5 seconds. Slowly turn your palm downward and hold for 5 seconds. Make sure you keep your elbow at your side and bent 90 degrees throughout this exercise. Repeat 10 times.



Pronation and supination of the forearm

6. Wrist flexion exercise: Hold a can or hammer handle in your hand with your palm facing up. Bend your wrist upward. Slowly lower the weight and return to the starting position. Repeat 10 times. Do 3 sets of 10. Gradually increase the weight of the can or weight you are holding.



Wrist flexion

Carpal Tunnel Rehabilitation Exercises

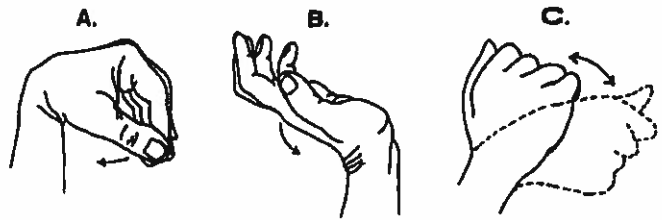
You may do all of these exercises right away.

1. Active range of motion

A. Flexion: Gently bend your wrist forward. Hold for 5 seconds. Repeat 10 times. Do 3 sets.

B. Extension: Gently bend your wrist backward. Hold this position 5 seconds. Repeat 10 times. Do 3 sets.

C. Side to side: Gently move your wrist from side to side (a handshake motion). Hold for 5 seconds at each end. Repeat 10 times. Do 3 sets.

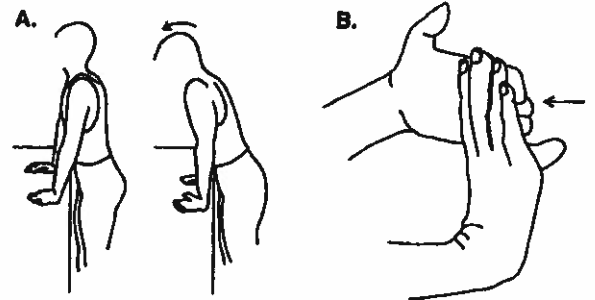


Active range of motion

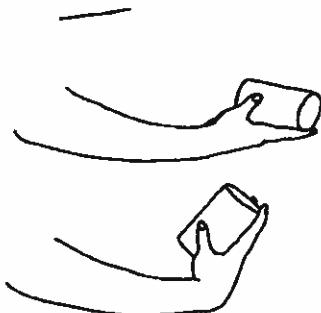
2. Stretching

A. Place both palms on a desk or table. Gently lean your body forward over your wrists and hold for 15–30 seconds. Repeat 3 times.

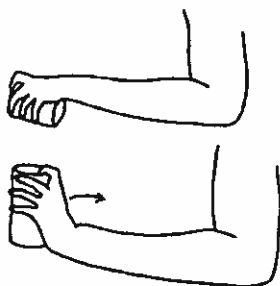
B. With your uninjured hand, help to bend the injured wrist down by pressing the back of your hand and holding it down for 15 to 30 seconds. Next, stretch the hand back by pressing the fingers in a backward direction and holding it for 15 to 30 seconds. Do this twice.



Stretching



Wrist flexion



Wrist extension

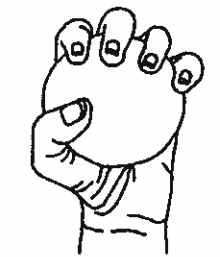
3. Tendon glides: Start with the fingers of your injured hand held out straight. Gently bend the middle joint of your fingers down toward your upper palm. Hold for 5 seconds. Repeat 10 times. Do 3 sets.



Tendon glides

4. Wrist flexion: Hold a can or hammer handle with your palm up. Bend your wrist upward. Hold this position for 5 seconds. Repeat 10 times. Do 3 sets. Gradually increase the weight of the object you are holding.

5. Wrist extension: Holding a can or similar object with the palm down, bend the wrist up. Hold this position for 5 seconds. Repeat 10 times. Do 3 sets.



Grip strengthening

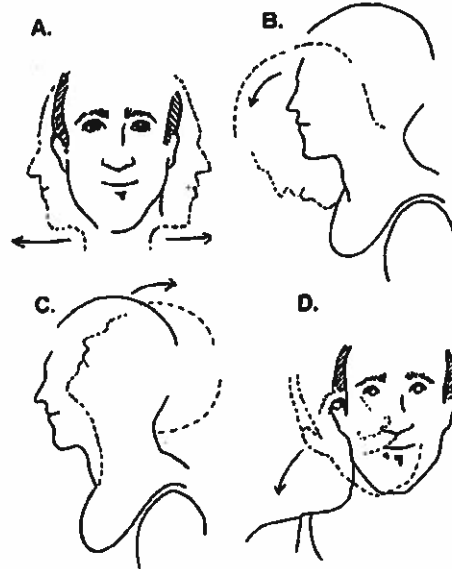
6. Grip strengthening: Squeeze a rubber ball and hold for 5 seconds. Repeat 10 times.

Ulnar Neuropathy (Handlebar Palsy) Rehabilitation Exercises

You may do all of these exercises right away.

1. Cervical range of motion exercises (neck):

- A. Rotation: Slowly turn your head toward your shoulder, keeping your chin level. Hold for 10 seconds. Bring your head back to the neutral position. Then turn your head to the opposite shoulder.
- B. Neck flexion: Bend your neck so that your chin touches your chest. Hold for 10 seconds. Bring your head back to the neutral position.



Cervical range of motion exercises

- C. Neck extension: Slowly tilt your head backward so that your chin is pointing towards the ceiling. Hold for 10 seconds. Note: If this position causes you to be dizzy or if it brings on symptoms in your arm, do not do this exercise.

- D. Side bend: Looking straight ahead, bring your ear toward your shoulder. Hold for 10 seconds. Return your head to the upright position. Repeat on the opposite side.



Shoulder Depression

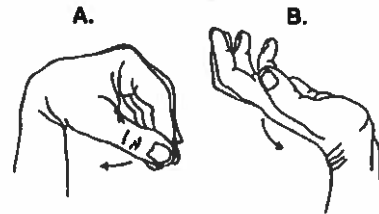
- 2. Shoulder depression: Facing straight ahead, pull your shoulder blades down and back. Hold for 10 seconds. Relax. Repeat 10 times.



Elbow range of motion

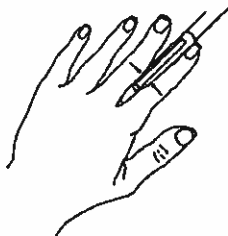
- 3. Elbow range of motion: Slowly bend your elbow and bring your hand toward your shoulder. Then straighten your elbow. Repeat 10 times.

- 4. Wrist range of motion: Bend your wrist forward and backward. Repeat 10 times.

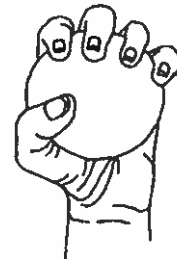


Wrist range of motion

- 5. Straight finger flexion: Make a right angle with your knuckles and keep your fingers straight. Hold this position for 10 seconds. Repeat 5 times.



- 6. Finger squeeze: Practice squeezing items between each of the fingers on your involved hand. You can use paper, pens, and sponges. Hold for 10 seconds. Repeat 5 times for each finger.



Finger flexion

- 7. Finger flexion: Practice squeezing a rubber ball and hold 10 seconds. Repeat 10 times.