

# Madigan Army Medical Center

## Musculoskeletal Treatment Guidelines

### CARPAL AND CUBITAL TUNNEL SYNDROME

#### Diagnosis/Definition

- Pain, loss of strength or sensory changes (paresthesias) in the distribution of the median or ulnar nerves not associated with neck pain.

#### Initial Diagnosis and Management

- History and physical exam (screen for associated conditions, i.e., diabetes, pregnancy, Rheumatoid Arthritis, Systemic Lupus Erythematosus (SLE)).
- Assessment with provocative tests to include Tinel's and Phalen's sign tests of specific nerves.
- Plain radiographs are not required (unless there was trauma); MRI/CT are not indicated.
- For Carpal Tunnel Syndrome (CTS) symptoms prescribe a wrist splint (wrist in a neutral position) to wear at night and during the day for aggravating activities (take splint off every 2 hours and move wrist to prevent stiffness).
- For cubital tunnel syndrome, educate the patient to avoid pressure on elbow.
- For both, try work simplification techniques using ergonomic principles and activity modification to decrease symptoms.

#### Ongoing Management and Objectives

- Expect resolution or decreasing symptoms within two to four weeks.
- Consider confirming the diagnosis with EMG/NCV (PM&R or Neuro diagnostics) if symptoms have not resolved within 6 weeks or if there has been no response to treatment.
- Continue NSAID and splint use.

#### Indication a profile is needed

- Any limitations that affect strength, range of motion, and general efficiency of upper arms.
- Slightly limited mobility of joints, muscular weakness, or other musculo-skeletal defects that may prevent hand-to-hand fighting and disqualifies for prolonged effort.
- Defects or impairments that require significant restriction of use

#### Specifications for the profile

- Week 1-4
  - No upper body PT requiring flexion or extension at the wrist
  - No lifting or pushing with affected wrist

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- No low crawl
- No stretcher duty with affected wrist(s)
- Motor vehicle driving only with splint and with caution

### **Patient/Soldier Education or Self care Information**

- See attached sheet
- Demonstrate deficits that exist
  - Describe/show soldier his/her limitations
- Explain injury and treatment methods
  - Use diagram attached to describe injury, location and treatment.
- Instruct and demonstrate rehab techniques
  - Demonstrate rehab exercises as shown in attached guide
  - Warm up before any sports activity
  - Participate in a conditioning program to build muscle strength
  - Do stretching exercises daily
- Ask the patient to demonstrate newly learned techniques and repeat any other instructions.
- Fine tune patient technique
- Correct any incorrect ROM/stretching demonstrations or instructions by repeating and demonstrating information or exercise correctly.
- Encourage questions
  - Ask soldier if he or she has any questions
- Give supplements such as handouts
- Schedule follow up visit
  - If pain persists
  - The pain does not improve as expected
  - Patient is having difficulty after three days of injury
  - Increased pain or swelling after the first three days
  - Patient has any questions regarding care

### **Indications for referral to Specialty Care**

- For cubital tunnel syndrome refer to Occupational Therapy (OT) for night elbow splints.
- If the patient exhibits no relief of pain, sensory changes, decreases in AROM or strength to the upper extremity within 3-4 weeks, refer to OT for evaluation and treatment.
- Chronic CTS or cubital tunnel syndrome with symptoms >6months can be referred to OT for evaluation and treatment.
- If the patient has completed a full course of treatment through OT and referred back to primary care with no improvement, referral to Orthopedic Surgery is indicated.
- Orthopedic Hand Clinic referral is indicated if a sensory (2 point discrimination >5mm) or motor deficit is demonstrated in patients with CTS.

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## Referral criteria for Return to Primary Care

- Chronic condition that can be managed at primary care level with intermittent specialty care evaluation/intervention as needed.

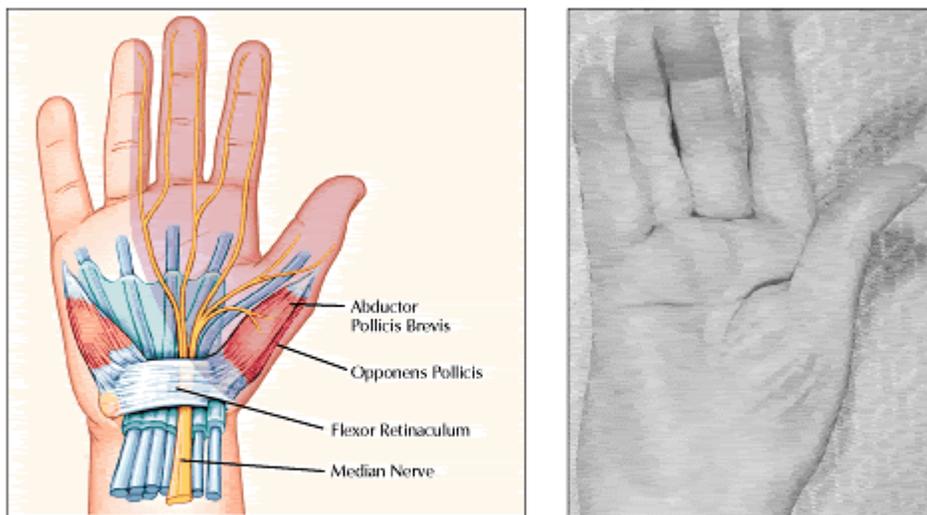
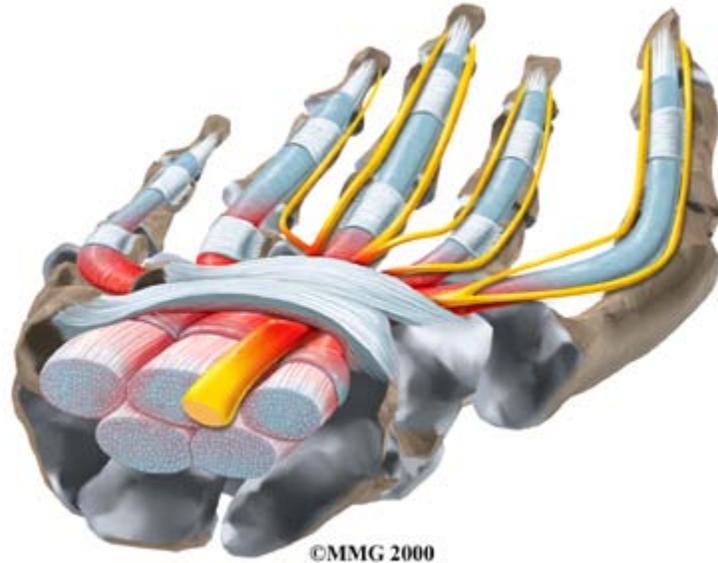


Figure 1. The carpal tunnel is a deep groove on the palmar surface of the carpal bones, underneath the flexor retinaculum. Through it pass the long flexor tendons and the median nerve; the latter supplies the muscles of the thenar eminence

and the shaded area of cutaneous sensation shown on the left. The hand on the right has palmar erythema and atrophy of the abductor pollicis brevis and opponens pollicis caused by median nerve compression.

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## Exercises

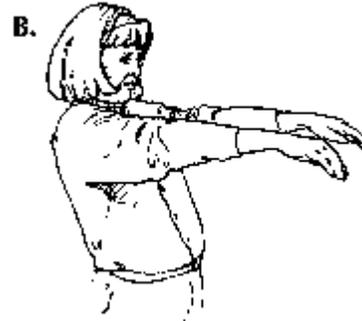
Here are some exercises intended to help prevent carpal tunnel syndrome. Remember doing a quick five-minute exercise warm-up before starting work, just as runners stretch before a run, can help prevent work-related injuries.

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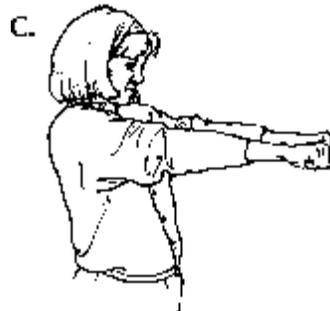
Extend and stretch both wrists and fingers acutely as if they are in a handstand position. Hold for a count of 5.



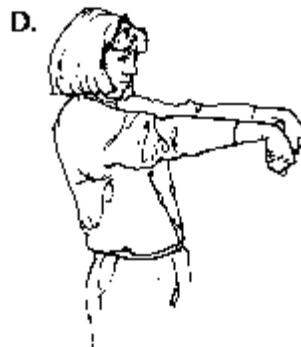
Straighten both wrists and relax fingers.



Make a tight fist with both hands.



Then bend both wrists down while keeping the fist. Hold for a count of 5.



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E.



Straighten both wrists and relax fingers, for a count of 5.

F.



The exercise should be repeated 10 times.  
Then let your arms hang loosely at the side and shake them for a few seconds.

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<b>PHYSICAL PROFILE</b>			
For use of this form, see AR 40-501, the proponent agency is the Office of The Surgeon General			
1. MEDICAL CONDITION <b>CARPAL AND CUBITAL SYNDROME</b>	2.	P	U
		L	H
		E	S
3. ASSIGNMENT LIMITATIONS ARE AS FOLLOWS WEEKS 1 - 4 , No upperbody PT requiring flexion or extension at the wrist, Motor vehicle driving only with splint and with caution , No lifting or pushing with affected wrist, No low crawl			CODES
4. THIS PROFILE IS <input type="checkbox"/> PERMANENT <input checked="" type="checkbox"/> TEMPORARY EXPIRATION DATE.			
5. THE ABOVE STATED MEDICAL CONDITION SHOULD NOT PREVENT THE INDIVIDUAL FROM DOING THE FOLLOWING ACTIVITIES			
<input checked="" type="checkbox"/> Groin Stretch	<input checked="" type="checkbox"/> Thigh Stretch	<input checked="" type="checkbox"/> Lower Back Stretch	<input type="checkbox"/> Neck & Shoulder Stretch
<input checked="" type="checkbox"/> Hip Raise	<input checked="" type="checkbox"/> Quads Stretch & Bal.	<input checked="" type="checkbox"/> Single Knee to Chest	<input type="checkbox"/> Upper Back Stretch
<input checked="" type="checkbox"/> Knee Bender	<input checked="" type="checkbox"/> Calf Stretch	<input checked="" type="checkbox"/> Straight Leg Raise	<input type="checkbox"/> Chest Stretch
<input type="checkbox"/> Side-Straddle Hop	<input checked="" type="checkbox"/> Long Sit	<input type="checkbox"/> Elongation Stretch	<input type="checkbox"/> One-Arm Side Stretch
<input checked="" type="checkbox"/> High Jump	<input checked="" type="checkbox"/> Hamstring Stretch	<input checked="" type="checkbox"/> Turn and Bounce	<input type="checkbox"/> Two-Arm Side Stretch
<input checked="" type="checkbox"/> Jogging in Place	<input checked="" type="checkbox"/> Hams. & Calf Stretch	<input checked="" type="checkbox"/> Turn and Bend	<input type="checkbox"/> Side Bender
<input type="checkbox"/> Neck Stretch	<input checked="" type="checkbox"/> Ankle Stretch	<input type="checkbox"/> Hip Stretch	<input type="checkbox"/> Upper Body Wt Tng
	<input checked="" type="checkbox"/> Lower Body Wt Tng	<input type="checkbox"/> All	
6. AEROBIC CONDITIONING EXERCISES	7. FUNCTIONAL ACTIVITIES	8. TRAINING HEART RATE FORMULA	
<input checked="" type="checkbox"/> Walk at Own Pace and Distance	<input type="checkbox"/> Wear Backpack (40 Lbs.)	MALES 220                  FEMALES 225	
<input checked="" type="checkbox"/> Run at Own Pace and Distance	<input checked="" type="checkbox"/> Wear Helmet	MINUS (-) AGE	
<input checked="" type="checkbox"/> Bicycle at Own Pace and Distance	<input type="checkbox"/> Carry Rifle	MINUS (-) RESTING HEART RATE	
<input type="checkbox"/> Swim at Own Pace and Distance	<input type="checkbox"/> Fire Rifle	TIMES (X) % INTENSITY	
<input checked="" type="checkbox"/> Walk or Run in Pool at Own Pace	<input type="checkbox"/> All	PLUS (+) RESTING HEART RATE	
<input type="checkbox"/> Unlimited Walking	With Hearing Protection	50% EXTREMELY POOR CONDITION	
<input type="checkbox"/> Unlimited Running	<input checked="" type="checkbox"/> KP/Mopping/Mowing Grass	60% HEALTHY, SEDENTARY INDIVIDUAL	
<input type="checkbox"/> Unlimited Bicycling	<input checked="" type="checkbox"/> Marching Up to <u>2</u> Miles	70% MODERATELY ACTIVE, MAINTENANCE	
<input type="checkbox"/> Unlimited Swimming	<input checked="" type="checkbox"/> Lift Up to <u>15</u> Pounds	80% WELL TRAINED INDIVIDUAL	
<input type="checkbox"/> Run at Training Heart Rate for ____ Min.	PHYSICAL FITNESS TEST		
<input type="checkbox"/> Bicycle at Training Heart Rate for ____ Min.	<input checked="" type="checkbox"/> Two Mile Run <input checked="" type="checkbox"/> Walk		
<input type="checkbox"/> Swim at Training Heart Rate for ____ Min.	<input type="checkbox"/> Push-Ups <input checked="" type="checkbox"/> Swim		
	<input checked="" type="checkbox"/> Sit-Ups <input checked="" type="checkbox"/> Bicycle		
9. OTHER			
TYPED NAME AND GRADE OF PROFILING OFFICER		SIGNATURE	DATE
TYPED NAME AND GRADE OF PROFILING OFFICER		SIGNATURE	DATE
<b>ACTION BY APPROVING AUTHORITY</b>			
PERMANENT CHANGE OF PROFILE <input type="checkbox"/> APPROVED <input type="checkbox"/> NOT APPROVED			
TYPED NAME, GRADE & TITLE OF APPROVING AUTHORITY		SIGNATURE	DATE
<b>ACTION BY UNIT COMMANDER</b>			
THIS PERMANENT CHANGE IN PROFILE SERIAL <input type="checkbox"/> DOES <input type="checkbox"/> DOES NOT REQUIRE A CHANGE IN MEMBER'S			
<input type="checkbox"/> MILITARY OCCUPATIONAL SPECIALTY <input type="checkbox"/> DUTY ASSIGNMENT    BECAUSE:			
TYPED NAME AND GRADE OF UNIT COMMANDER		SIGNATURE	DATE
PATIENT'S IDENTIFICATION (For typed or written entries give: Name (last, first, middle); grade; SSN; hospital or medical facility)		UNIT	
		ISSUING CLINIC AND PHONE NUMBER	
		DISTRIBUTION UNIT COMMANDER - ORIGINAL & 1 COPY HEALTH RECORD JACKET - 1 COPY CLINIC FILE - 1 COPY MILPO - 1 COPY	

**Madigan Army Medical Center**  
**Musculoskeletal Treatment Guidelines**  
**PATIENT INFORMATION**

When you stop and think, we have been given two remarkable instruments to help us in life: our hands.

Our hands distinguish us from the rest of the animal world. They are capable of an amazing variety of functions. Our hands can be used to grip like a vice, explore the world, bring food to our mouths or play the violin.

As our hands are used and overused throughout life, it is not surprising that they can become a source of pain.

Carpal tunnel syndrome is only one of many causes of hand pain. The symptoms can be minor or severe, and sometimes disabling.

Carpal tunnel syndrome occurs more frequently in women and sometimes starts during pregnancy, but also can occur in men. Although carpal tunnel syndrome may be aggravated by work, it frequently occurs in people who are not working with their hands. It is sometimes associated with medical illness, but can occur for no apparent reason.



Carpal tunnel syndrome is related to pressure on the median nerve which is one of three important nerves that supply sensation to the hand.

As the nerve travels from the neck to the hand, it passes through a tunnel in the wrist: the carpal tunnel.

Like all nerves, the median nerve is a delicate structure. In the tunnel, the median nerve is accompanied by nine tendons, which are tough and fibrous.

The carpal tunnel has a normal resting pressure. In most of us the pressure is low. In some of us, the pressure is higher.

Any activity that raises the pressure in the carpal tunnel affects the tendons and nerve. The tendons are durable and tolerate the pressure well. In contrast, the

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median nerve is delicate and is vulnerable to pressure changes. Even mild increases in pressure that are sustained over a prolonged period of time can result in symptoms of pain and numbness.

Factors that increase the pressure within the carpal canal, include bending at the wrist and repetitive wrist motion.

As the pressure within the carpal canal increases, the median nerve is compressed and symptoms of unpleasant tingling and numbness are experienced. In most cases the little finger is spared.

If you have pain, numbness, and tingling in the fingertips of your hand with manual activity and are awakened with these symptoms at night, you may have carpal tunnel syndrome—ask your doctor.

Be sure to describe the location of your pain to your doctor. Also, mention the activities which aggravate and relieve your pain.



Your doctor will examine your hand and look for changes in muscle contour and sensibility.

Your doctor may order blood tests and an X-ray. Frequently electrical studies are needed.

Nerves are like wires; they conduct electricity. If a nerve is compressed the speed of electrical conduction is slowed. In carpal tunnel syndrome, the speed of conduction of the median nerve is decreased. This delay in conduction can be measured.

Although carpal tunnel syndrome can be painful, even disabling, there are many things which you and your doctor can do to relieve your pain.

- Wrist splints can be used to decrease bending.
- Hard splints can be used at night, and soft splints can be used during the daytime depending upon your needs.

Your doctor may prescribe medications. Sometimes steroid injections are indicated.

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If you believe your problem is aggravated at your work, sometimes simple changes can make a difference. For people who sit at a desk or keyboard, the working surface should be adjusted so that the majority of work can be performed with the wrist in neutral position—not bent upwards or downwards. This can sometimes be accomplished by simple adjustment of the chair.



Many people are required to perform repetitive activities at work. With careful planning some activities can be alternated.

If conservative measures fail, or if your condition is severe and affects the muscles in the hand, your doctor may recommend surgery.

Fortunately, the roof of the carpal tunnel is covered by a fibrous ligament, which can be released by your surgeon.

Remember, the problem of carpal tunnel syndrome is related to pressure on the median nerve. If the roof of the carpal tunnel is opened, even slightly, studies indicate that the volume of the carpal tunnel increases by 26%—enough to relieve most of the pressure on the nerve.

If surgery is performed, it is unnecessary to stay in the hospital. The type of anesthetic can be chosen by you and your doctor.

Although you may have carpal tunnel syndrome in both hands, usually surgery is staged, so that it is performed on one hand followed later on the other hand.

After surgery, your hand will be covered by a bandage. It is important to keep this dry, and to elevate the hand so that it is above the heart as much as possible. Your doctor will prescribe medication for pain, but if the pain becomes severe, call your doctor.

In a few days, your doctor will remove the dressing and apply a smaller dressing. In 2 to 3 weeks, he will remove the stitches.

- It is important to keep the hand dry until the sutures are removed by your doctor.
- As in all operations, problems can occur. Call your doctor for excessive pain, swelling or numbness.

You can return to normal activity as recommended by your doctor. At work, try to avoid continuous repetitive movements by alternating activities as much as possible.

Be kind to your hands

Your hands are remarkable instruments which can serve you well throughout life, but it is important that you take good care of them.

Do not use your hands as a hammer. Avoid trauma, as much as possible and use a real hammer.

Wear protective gloves when doing hard work or when in cold weather.

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If you have surgery, finger motion can reduce swelling. Move your fingers, even while wearing your splint. Do not drive until you are able to make a firm fist.

We are lucky to have our hands. They have been given to us to use throughout life. If we are kind to our hands, they will be kind to us.

Your orthopaedist is a medical doctor with extensive training in the diagnosis and nonsurgical and surgical treatment of the musculoskeletal system, including bones, joints, ligaments, tendons, muscles and nerves.

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## Musculoskeletal Treatment Guidelines

Input was provided by:

- Occupational Therapy Clinic
- Physical Therapy Clinic
- Orthopedic Clinic
- Family Practice Clinic
- Okubo Clinic
- 555 Engineers
- 1<sup>st</sup> Brigade
- 3<sup>rd</sup> Brigade
- 62<sup>nd</sup> Medical Brigade

POC:

- Outcome Management

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- Mellion, I., Morris B. (2002). Team Physician's Handbook, 3<sup>rd</sup> Edition. Hanley & Belfus, Inc: Philadelphia, PA.
- Lillegard, Rucker. (1999). The Handbook of Sports Medicine. A symptom-oriented approach, 2<sup>nd</sup> Edition. Butterworth-Heinemann Medical: Burlington, MA.
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- Schenck, Robert, Jr. et al. (1999). Athletic Training and Sports Medicine, 3<sup>rd</sup> Edition. American Academy of Orthopedics: Tucson, AZ.
- [http://www.mamc.amedd.army.mil/referral/Documents/Common/Carpal and Cubital Tunnel Syndromes.pdf](http://www.mamc.amedd.army.mil/referral/Documents/Common/Carpal_and_Cubital_Tunnel_Syndromes.pdf)