



## Rating Impairments of the Upper Extremity

DWC Training – Feb/Mar 2007

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## Overview

- First hour
  - Basic Rating Principles Review
  - Range of Motion
  - Practice Problem - ROM
- Second hour
  - Carpal Tunnel Syndrome
  - Practice Problem - CTS

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## Impairment v. Disability

- Ratings calculated under the AMA Guides reflect impairment
- Impairment ratings are converted to disability by adjusting for FEC, occupation and age using the PDRS

WP, UE, LE → Impairment

PD → Disability

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## Converting Impairment Scales

- To convert to Whole Person:
  - $UE \times .6 = WP$  (Table 16-3, p. 439)
  - $LE \times .4 = WP$  (Table 17-3, p. 527)

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## Adding v. Combining

- Adding example
  - Wrist flexion → 11 UE
  - Wrist extension → 7 UE
- Combining example
  - Wrist flexion → 11 UE
  - Carpal instability → 16 UE

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## Adding v. Combining General Rules

- Values are always combined except for:
  - ROM values within a joint
  - Muscle weakness of different units of motion within a joint (UE's only, not LE's)
  - Values for all thumb joint motions
  - Hand values contributed by each digit
  - Thumb amputation proximal to the MP joint

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## Range of Motion

- Shoulder: up to 6 values AMA pp. 476, 477, 479
- Elbow: up to 4 values AMA pp. 472, 474
- Wrist: up to 4 values AMA pp. 467, 469

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## ROM Example – Part 1

- Occupation: Carpenter (Group 380)
- Age: 25 years
- Worker injures left minor arm when load of lumber falls on it
- Limitation of motion of right wrist joint with flexion to 40°, extension to 10°, radial deviation of 5° and ulnar deviation of 5°

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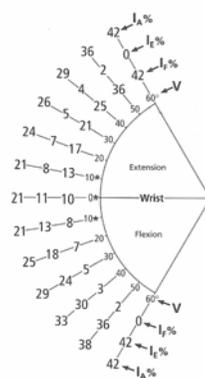
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## Wrist ROM Flexion and Extension

Figure 16-28, p. 467

40° Flexion

10° Extension




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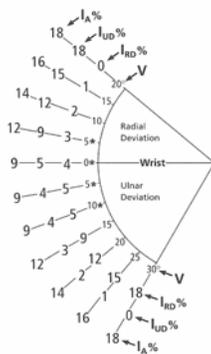
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## Wrist ROM Radial and Ulnar Deviation

Figure 16-31, p. 469

5° Radial dev

5° Ulnar dev




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## Add Impairment Values Within a Joint

Flexion	3
Extension	8
Radial	3
<u>Ulnar</u>	<u>+4</u>
<i>Total</i>	18 UE

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## Convert to WP and Adjust for Disability

- Convert to whole person

$$18 \text{ UE} \times .6 = 11 \text{ WP}$$

- Adjust for disability

$$16.04.01.00 - 11 - [4]14 - 380J - 22 - 18 \text{ PD}$$

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## ROM Example – Part 2

- In addition to wrist injury, worker also fractures right elbow resulting in...
- Ankylosis of left elbow joint in 70° flexion and 10° pronation.

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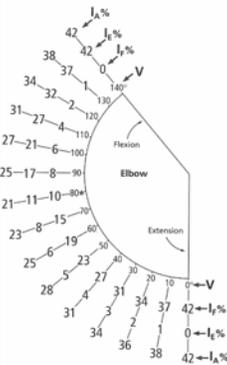
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### Elbow Flexion Ankylosis

Figure 16-34, p. 472

Ankylosis in 70° flexion




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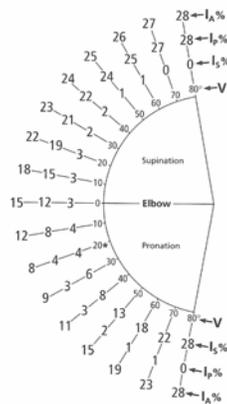
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### Elbow Pronation Ankylosis

Figure 16-37, p. 474

Ankylosis in 10° pronation




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## Add Impairments Within a Joint

Flexion	23
Pronation	+12
	<hr/>
	35 UE

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## Convert to WP and Adjust for Disability

- Convert to whole person

$$35 \times .6 = 21 \text{ WP}$$

- Adjust for Disability

$$16.03.01.00 - 21 - [2]24 - 380I - 32 - 27 \text{ PD}$$

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17

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## Combine Disabilities

Elbow		Shoulder	
(Ankylosis)		(Reduced ROM)	
↓		↓	
27 PD	C	18 PD	= 40 Final PD

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## Exercise #1 - ROM

Janitor (group 340) – 39 years old

Worker fell from a ladder landing on his right (major) arm. After recovery, shoulder motions were as follows:

Extension = 20°

Flexion = 110°

External rotation = 60°

Internal rotation = 20°

No loss of abduction or adduction

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## Exercise #1 - ROM

- In addition to shoulder injury, worker fractured wrist resulting in ankylosis in following position:
  - 10° extension
  - 0° radial deviation
- Calculate impairment and final PD for this injury.

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## Exercise #1 - Hints

- Impairment # for shoulder ROM
  - 16.02.01.00
- Impairment # for wrist ROM
  - 16.04.01.00
- These impairment #'s take an “F” variant for this occupation

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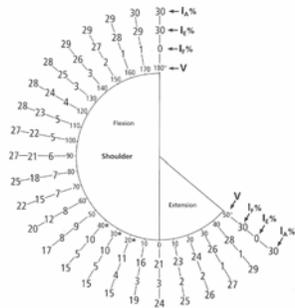
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## Shoulder – Flex/ext

Table 16-40  
P. 476



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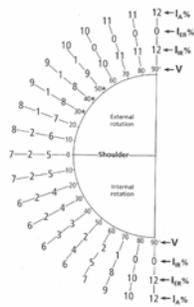
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## Shoulder – Int Rot/Ext Rot

Table 16-46  
P. 479



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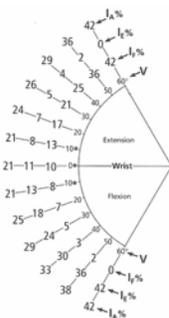
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## Wrist – Flex/Ext

Table 16-28  
P. 467



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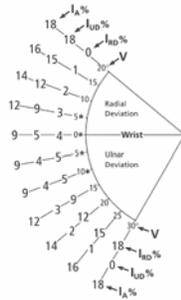
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## Wrist – Radial/Ulnar Dev

Table 16-31  
P. 469



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## Peripheral Nerves

- What are they?
- What is the most common peripheral nerve disorder?

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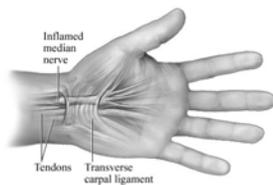
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## Carpal Tunnel Syndrome

- What is it?
  - Compression of the median nerve at the wrist



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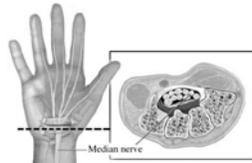
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## Carpal Tunnel Syndrome

- What are typical symptoms of CTS?
  - Pain and tingling of wrist and hand including thumb, index, middle and portion of ring finger
  - Weakness in hand



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## Carpal Tunnel Syndrome

- How do you rate CTS?
  - Doctor quantifies motor loss (strength) and sensory deficit (sensitivity to touch; pain)
  - Percentage losses are applied to maximum values for median nerve
    - Max values – page 492
    - Sensory loss categories – page 482
    - Motor loss categories – page 484

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29

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## Carpal Tunnel Example

- Occupation: Secretary (Group 112)
- Age: 42 years
- Right carpal tunnel syndrome. After surgical release, there is abnormal EMG/nerve conduction testing with sensory and motor deficits, reduced pinch strength and sensibility.

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## Carpal Tunnel Example

- Doctor evaluated sensory deficit as grade 4 per Table 16-10 (p. 482) and indicated a 25% sensory nerve deficit.
- Doctor evaluated motor deficit as grade 4 per Table 16-11 (p. 484) and indicated a 25% motor nerve deficit.

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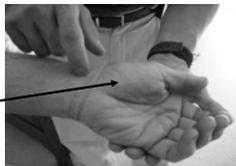
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## Carpal Tunnel Example

- Doctor also found a 50% grip loss and significant weakness in the thenar muscles.

Thenar eminence



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## General Rating Approach

- Multiply maximum sensory value for nerve by percentage of sensory deficit
- Multiply maximum motor value for nerve by percentage of motor deficit
- Combine resulting values

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## Calculate Impairment Values

	Max	Percent	Resulting
	value	deficit	impairment
		found by	
		doctor	

Sensory: 39 UE x 25% = 10 UE

Motor: 10 UE x 25% = 3 UE

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37

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## Combine and Convert

	Motor	Sensory	Median
	value	value	nerve
			value

Combine 10 C 3 = 13 UE

Convert to WP 13 UE x .6 = 8 WP

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## Adjust for Disability

16.01.02.02 – 8 - [4]10 – 112H – 13 – 14 PD

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## CTS Rating Summary

1. Look up maximum allowable sensory and motor deficits for median nerve in Guides (Table 16-15, p. 492)
2. Multiply maximums by percentages of sensory and motor deficits found by doctor

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## CTS Rating Summary

- 3) Combine resulting sensory and motor nerve impairments.
- 4) Convert to WP and adjust for disability

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## Carpal Tunnel Syndrome

- Three potential rating scenarios after optimal recovery (p. 495):
  1. Abnormal EMG/nerve conduction results and positive clinical findings on sensibility and strength testing
  2. Abnormal EMG/nerve conduction results with normal clinical findings
  3. Normal EMG/nerve conduction results and clinical findings

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## Outcome One

- Abnormal EMG/nerve conduction and positive findings on sensibility and strength testing
- Method:
  - Doctor provides percentages of sensory and motor nerve deficits
  - Multiply by maximum value for nerve impairment

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## Outcome Two

- Abnormal EMG/nerve conduction with normal sensibility and strength testing
- Method:
  - Doctor may award impairment rating from 0% to 5% upper extremity impairment
  - Range is based on activities of daily living

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## Outcome Three

- Normal sensibility, strength and nerve conduction testing
- Impairment = 0%
  - Diagnosis of carpal tunnel syndrome should be confirmed by testing.
  - For a rating on CTS, there must be at least some positive test results

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## What About Grip Loss?

- Should additional impairment be given for the 50% grip loss?
- Per AMA Guides, page 494, additional impairment value is not given for grip strength for compression nerve disorder.

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## Exercise #2 – CTS

A 38-year-old high school teacher (Grp # 212) developed pain and numbness in the right hand and wrist after several months of typing lesson plans. The treating physician diagnosed carpal tunnel syndrome which resulted in surgery. After optimal recovery time, the worker still had moderate pain with tingling and weakness in the right wrist. Electrodiagnostic studies were markedly abnormal. Sensibility and pinch strength were reduced on the right. The physician described Grade 4 sensory loss of 10% and Grade 4 strength loss 20% for median nerve of the right upper extremity. Calculate impairment and PD.

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## Exercise #2 Hints

- Consult slide #34 for maximum values for median nerve
- Impairment number for CTS is 16.01.02.02
- This impairment number takes an “F” variant for group #212

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