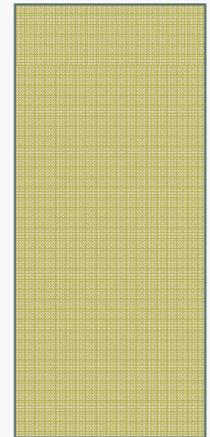


HAND IMPAIRMENT AND CARPAL TUNNEL SYNDROME

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Essentials of Hand Impairment



Use Figure 1 (Page 16) as a workbook! (keeps you honest)

Amputation Value between elbow and metacarpophalangeal level is 95% of Upper Extremity (57% WPI)

Whole Hand: Thumb 40%; Index and Middle: 20% each; Ring and Little: 10% each

WV has separate Amputation values by Statute

Sensory separate for: thumb/fingers; radial and ulnar aspects of digital nerves

Separate maximum value for each palmar digital nerve and nerve branch

Statutory Impairments of Hand (Amputation)

§23-4-6. Classification of and criteria for disability benefits.

f) If the injury results in the total loss by severance of any of the members named in this subdivision, the percentage of disability shall be determined by the percentage of disability, specified in the following table:

The loss of a little or fourth finger (one phalanx) shall be considered a three percent disability.

The loss of a little or fourth finger shall be considered a five percent disability.

The loss of ring or third finger (one phalanx) shall be considered a three percent disability.

The loss of ring or third finger shall be considered a five percent disability.

The loss of middle or second finger (one phalanx) shall be considered a three percent disability.

Figure 1. Upper Extremity Impairment Evaluation Record**--Part I (Hand)

Side R L

Name _____ Age _____ Sex M F Dominant hand R L Date _____

Occupation _____ Diagnosis _____

Abnormal motion					Amputation	Sensory loss	Other disorders	Hand impairment %	
Record motion, ankylosis, and impairment %					Mark level & impairment %	Mark type, level, & impairment %	List type & impairment %	* Combine digit IMP% * Convert to hand IMP%	
		Flexion	Extension	Ankylosis	IMPs				
Thumb	IP	Angle*							
		IMP%							
	MP	Angle*							
		IMP%							
	CMC	Radial abduction	Angle*						Abnormal motion [1]
		IMP%						Amputation [2]	
Adduction		CMC						Sensory loss [3]	
Opposition		CMC						Other disorders [4]	
								Digit impairment % * Combine 1, 2, 3, 4	
Add impairment % CMC + MP + IP = [1]					IMP % = [2]	IMP % = [3]	IMP % = [4]	Hand impairment % * Convert above	
Index	DIP	Angle*						Abnormal motion [1]	
		IMP%						Amputation [2]	
	PIP	Angle*							Sensory loss [3]
		IMP%							Other disorders [4]
	MP	Angle*							Digit impairment % * Combine 1, 2, 3, 4
IMP%									
+ Combine impairment % MP + PIP + DIP = [1]					IMP % = [2]	IMP % = [3]	IMP % = [4]	Hand impairment % * Convert above	
Middle	DIP	Angle*						Abnormal motion [1]	
		IMP%						Amputation [2]	
	PIP	Angle*							Sensory loss [3]
		IMP%							Other disorders [4]
	MP	Angle*							Digit impairment % * Combine 1, 2, 3, 4
IMP%									
+ Combine impairment % MP + PIP + DIP = [1]					IMP % = [2]	IMP % = [3]	IMP % = [4]	Hand impairment % * Convert above	
Ring	DIP	Angle*						Abnormal motion [1]	
		IMP%						Amputation [2]	
	PIP	Angle*							Sensory loss [3]
		IMP%							Other disorders [4]
	MP	Angle*							Digit impairment % * Combine 1, 2, 3, 4
IMP%									
+ Combine impairment % MP + PIP + DIP = [1]					IMP % = [2]	IMP % = [3]	IMP % = [4]	Hand impairment % * Convert above	
Little	DIP	Angle*						Abnormal motion [1]	
		IMP%						Amputation [2]	
	PIP	Angle*							Sensory loss [3]
		IMP%							Other disorders [4]
	MP	Angle*							Digit impairment % * Combine 1, 2, 3, 4
IMP%									
+ Combine impairment % MP + PIP + DIP = [1]					IMP % = [2]	IMP % = [3]	IMP % = [4]	Hand impairment % * Convert above	

* Combined Values Chart (p. 322-324) ** Use Table 1 (Digits to hand p. 18), Use Table 2 (Hand to upper extremity) p. 19, Use Table 3 (p. 20)

** Courtesy of G. de Groot Swanson, MD

“OTHER”

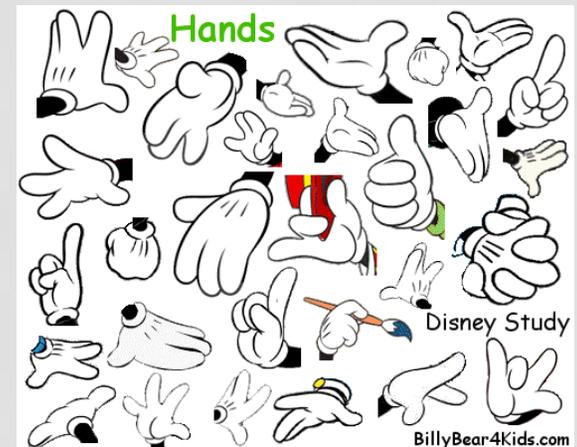
Used with Table 18 (Page 58) if functionally significant (Pages 58-60)

Crepitation
Synovial Hypertrophy
Lateral Deviation
Rotational Deformity
Persistent subluxation or dislocation
Mediolateral Instability

Select Multiplier based on Severity; Multiply by Joint Value (Table 18).

Carpal Instability (Table 26, Page 61)

Arthroplasty (Table 27, Page 61).





“Other” (Continued)

Musculotendinous Impairments (Used with Table 18)

Intrinsic Tightness

Constrictive Tendonitis

Subluxation of Extensor Tendon



CARPAL TUNNEL ISSUES

Definitions: Carpal Tunnel Syndrome Vs. Median Nerve Injury

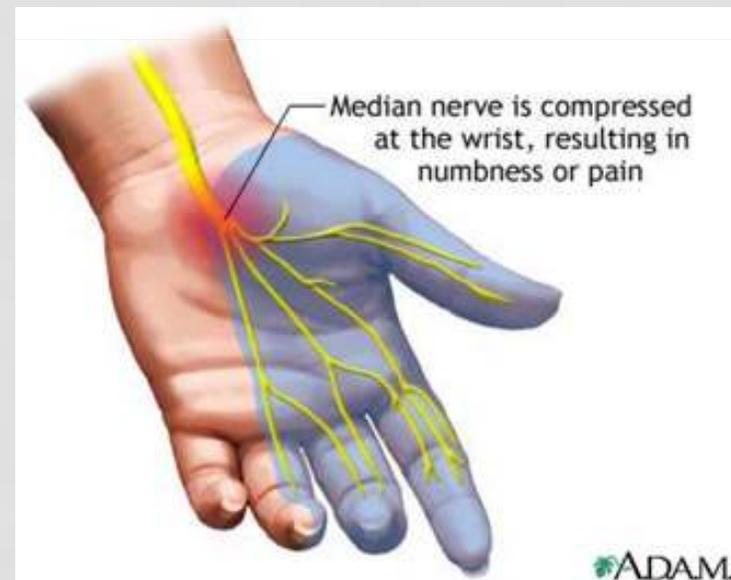
Carpal Tunnel Syndrome

Nerve Entrapment (Site)

Major Peripheral Nerves

Causalgia and Reflex Sympathetic Dystrophy

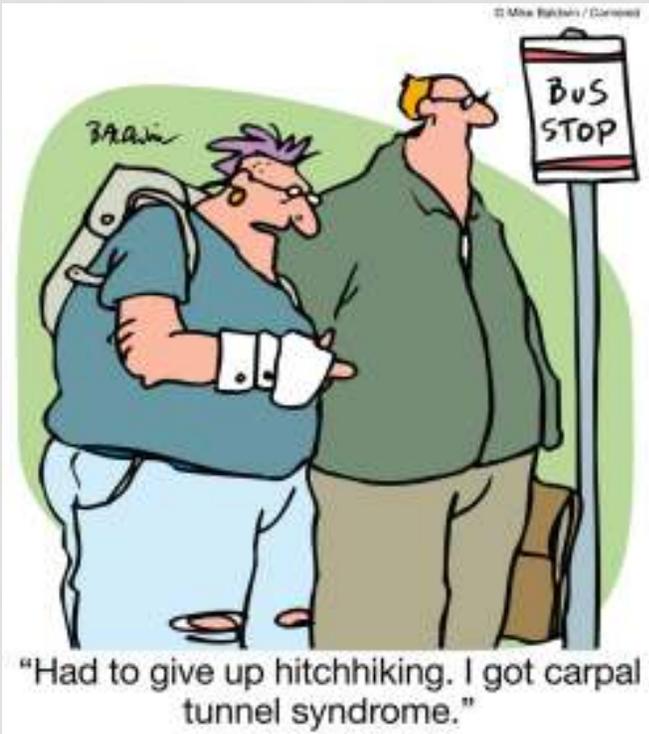
Severity



Methods of Derivation of Impairment

1. Table 16 (Page 57): If meets definition of “Entrapment Neuropathy”
2. Method described in Steps 1 – 7 on Page 56





Detailed Method (Page 56)

1. Identify the nerve and level of injury
2. Rate sensory and motor severity (usually second category: 2 or 4)
3. Multiply severity factor (maximum % impairment by Grade (0.25)
4. For mixed nerves, combine; for multiple nerves, combine
5. Convert to WPI

Simplified Method: Using Table 16 (Page 57)



WHAT DOES CARPAL TUNNEL SYNDROME FEEL LIKE?

1. Simple and Allowed by the AMA Guides
2. Based on the Example on Page 56, injury must be extremely severe to justify more than the “mild” category (6% WPI): 60% strength loss was interpreted as “mild.”
3. May be “trumped” by the more detailed method (*Accurate and Reliable*)

Evidence of Motor Deficit

1. History consistent with weakness, clumsiness, limitation
2. Atrophy: thenar/hypothenar
3. Opposition gap
4. Estimation of grip strength (acceptable effort and curve).
5. "Tear Test (Ply Test)"
6. Electrodiagnostic Studies

Evidence of Sensory Deficit

1. Weber two-point discrimination
2. Consistent history
3. Electrodiagnostic Studies



Anatomy

Superiorly: transverse carpal ligament ; Inferiorly :
carpal bones

Accompanied by 9 flexor tendons

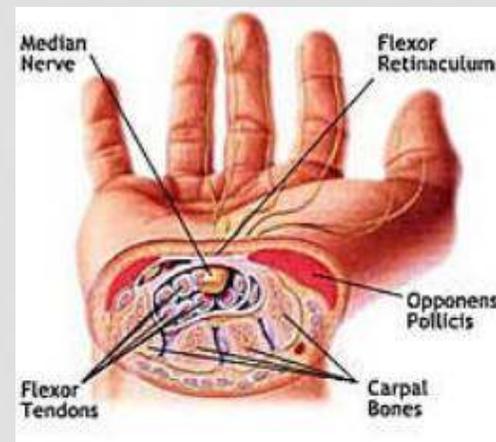
C6-C7-C8-T1: Rearranges in B. Plexus

C6-C7: Sensory (including thenar eminence)

C8-T1: Motor

Palmar cutaneous sensory nerve passes over the
tunnel: Thenar area spared

Martin Gruber Anastomosis



Accuracy

Clinical Diagnosis

Phalen's: Fair sensitivity and Specificity (70%)

Tinel's: Bad (Low) sensitivity; same specificity

NCS: Bad sensitivity; Good specificity (>90%); Usually bilateral



Impairment

Pain related (sleep, driving, work)

Dropping Objects

Doorknobs, keys, jar lids, coins, buttoning

Weakness



Causes (?)

Associations

Anatomy (Genetic)

Hormonal

Edema

Motion

Medication

Diabetes

Obesity

