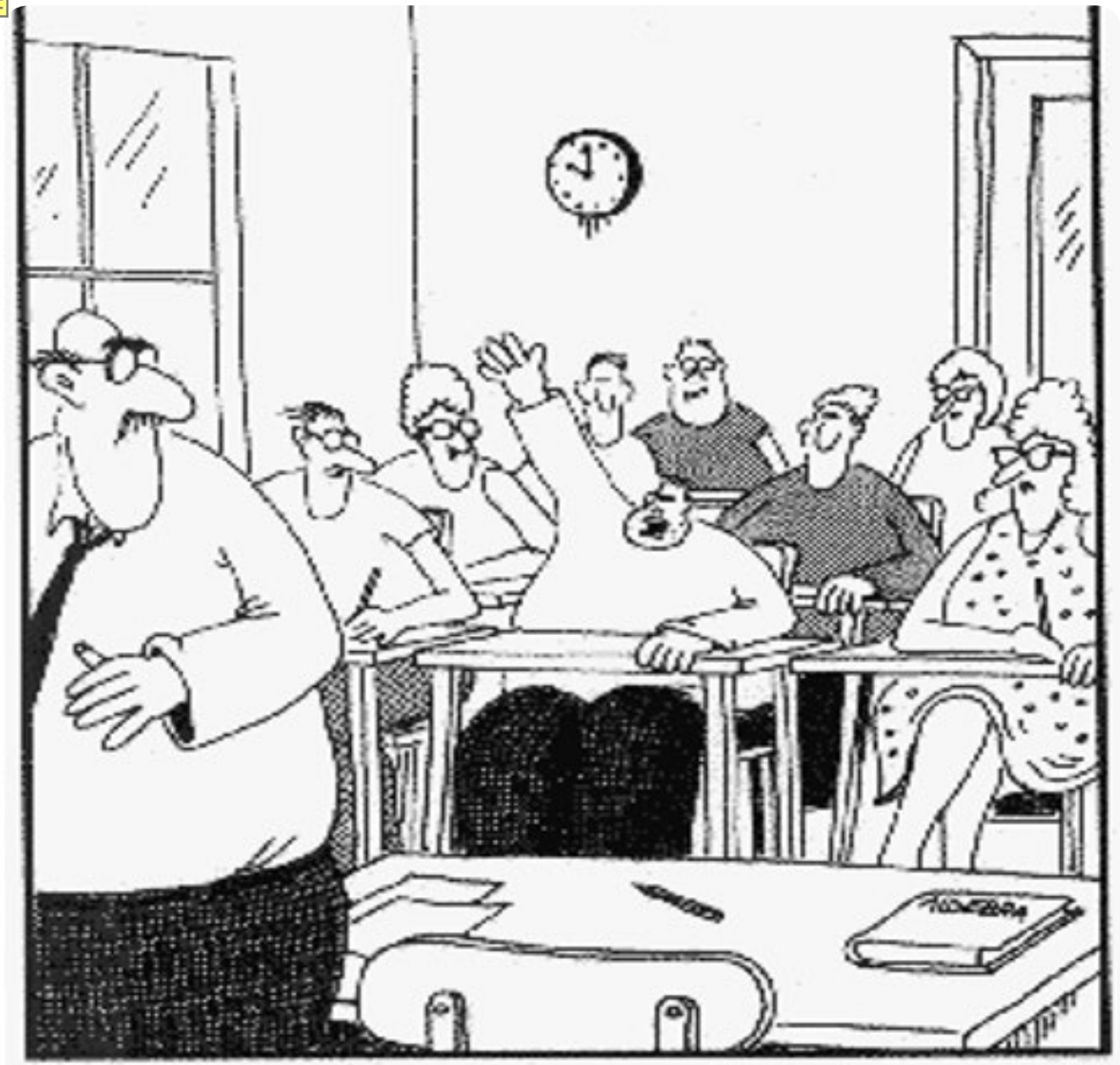
PART 3 - DESIGNATED DOCTOR 101 WORKSHOP

TDI Division of Workers' Compensation

DD 101 Workshop Evaluation

Following the afternoon MSK Examination portion of the workshop, be sure to complete and turn in the DD 101 Workshop evaluation that is in your handout folder.



"Mr. Osborne, may I be excused? My brain is full."

Ready for MSK Examinations?

Musculoskeletal IR

- **This afternoon we will discuss the IR process more in depth.**
  - ✓Upper Extremity (UE) IR
  - ✓Lower Extremity (LE) IR
  - ✓Spine IR
- Each section of the AMA Guides 4th Edition, Upper Extremity, Lower Extremity and spine use different methodology
- So you must learn the minimum that you will need to perform to be proficient in performing an IR evaluation for that region
  - ✓This minimum may not be medically sufficient for disputes other than IR

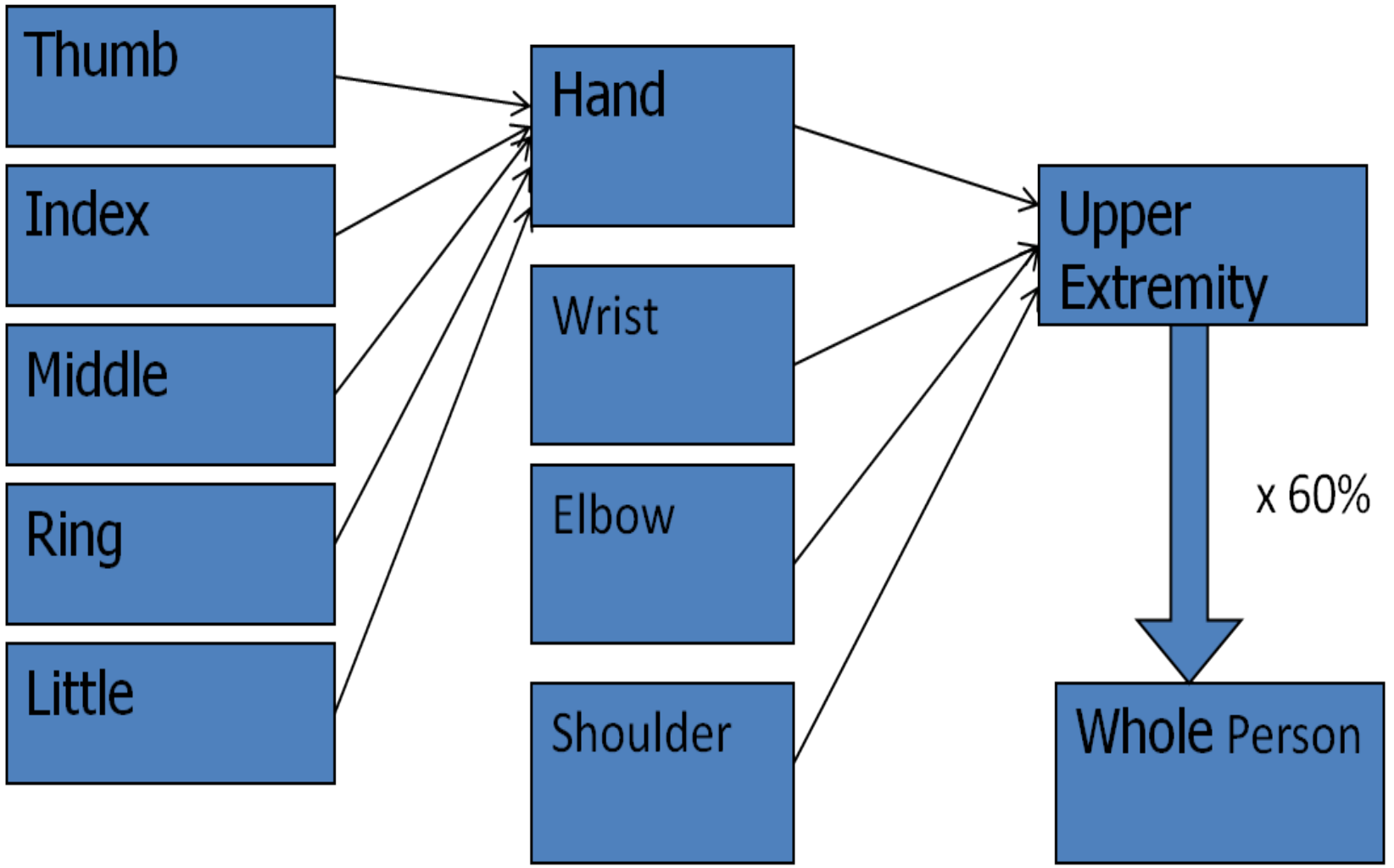
UPPER EXTREMITY IMPAIRMENT

Musculoskeletal IR

Upper Extremity IR

- Review UE Guides Section 3.1 and DD 101 “pearls”.
- Understand how to assign IR for the upper extremity, including the use of:
  - Figure 1 – Part 1 (Digits and hand)
  - Figure 1 – Part 2 (Remaining UE)

Upper Extremity IR



Upper Extremity IR

Relationship of Upper Extremity (UE) to Whole Person (WP):

- Upper Extremity = 60% of Whole Person
- Hand = 90% Upper Extremity
- Thumb = 40% Hand
- Index or Middle Finger = 20% Hand
- Ring or Little Finger = 10% Hand

Upper Extremity IR

The **digit values** must be converted to **hand values** by using

Table 1, p. 18

The hand values must **be converted to** upper extremity **values by using:**

Table 2, p. 19

The upper extremity values must be converted to whole person values

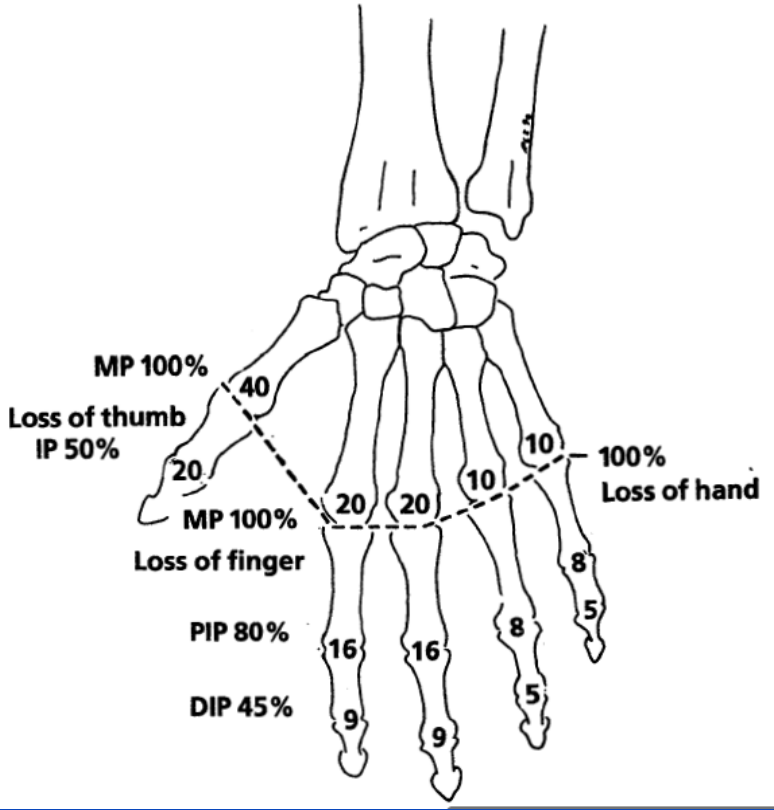
Table 3, p. 20

Upper Extremity IR

Table 1, p. 18

Relationship of Impairment of the Digits to the Impairment of the Hand.

Figure 3. Impairments of the Digits (percents outside digits) and of Hand (percents inside digits) for Amputations at Various Levels.*



% Impairment of Thumb	=	Hand	% Impairment of Index or middle finger	=	Hand	% Impairment of Ring or little finger	=	Hand
0- 1	=	0	0- 2	=	0	0- 4	=	0
2- 3	=	1	3- 7	=	1	5- 14	=	1
4- 6	=	2	8- 12	=	2	15- 24	=	2
7- 8	=	3	13- 17	=	3	25- 34	=	3
9- 11	=	4	18- 22	=	4	35- 44	=	4
12- 13	=	5	23- 27	=	5	45- 54	=	5
14- 16	=	6	28- 32	=	6	55- 64	=	6
17- 18	=	7	33- 37	=	7	65- 74	=	7
19- 21	=	8	38- 42	=	8	75- 84	=	8
22- 23	=	9	43- 47	=	9	85- 94	=	9
24- 26	=	10	48- 52	=	10	95-100	=	10
27- 28	=	11	53- 57	=	11			
29- 31	=	12	58- 62	=	12			
32- 33	=	13	63- 67	=	13			
34- 36	=	14	68- 72	=	14			
37- 38	=	15	73- 77	=	15			
39- 41	=	16	78- 82	=	16			
42- 43	=	17	83- 87	=	17			
44- 46	=	18	88- 92	=	18			
47- 48	=	19	93- 97	=	19			
49- 51	=	20	98-100	=	20			
52- 53	=	21						
54- 56	=	22						
57- 58	=	23						
59- 61	=	24						
62- 63	=	25						
64- 66	=	26						
67- 68	=	27						
69- 71	=	28						
72- 73	=	29						
74- 76	=	30						
77- 78	=	31						
79- 81	=	32						
82- 83	=	33						
84- 86	=	34						
87- 88	=	35						
89- 91	=	36						
92- 93	=	37						
94- 96	=	38						
97- 98	=	39						
99-100	=	40						

*See Table 2 (p. 19) for converting hand impairment to upper extremity impairment.

Upper Extremity IR

Table 2, p. 19

Relationship of Impairment of the Hand to Impairment of the Upper Extremity

Table 2. Relationship of Impairment of the Hand to Impairment of the Upper Extremity.*

% Impairment of		% Impairment of		% Impairment of		% Impairment of		% Impairment of		% Impairment of	
Hand	Upper extremity	Hand	Upper extremity	Hand	Upper extremity	Hand	Upper extremity	Hand	Upper extremity	Hand	Upper extremity
0 =	0	18 =	16	35 =	32	53 =	48	70 =	63	88 =	79
1 =	1	19 =	17	36 =	32	54 =	49	71 =	64	89 =	80
2 =	2			37 =	33			72 =	65		
3 =	3	20 =	18	38 =	34	55 =	50	73 =	66	90 =	81
4 =	4	21 =	19	39 =	35	56 =	50	74 =	67	91 =	82
		22 =	20			57 =	51			92 =	83
5 =	5	23 =	21	40 =	36	58 =	52	75 =	68	93 =	84
6 =	5	24 =	22	41 =	37	59 =	53	76 =	68	94 =	85
7 =	6			42 =	38			77 =	69		
8 =	7	25 =	23	43 =	39	60 =	54	78 =	70	95 =	86
9 =	8	26 =	23	44 =	40	61 =	55	79 =	71	96 =	86
10 =	9	27 =	24	45 =	41	62 =	56	80 =	72	97 =	87
11 =	10	28 =	25	46 =	41	63 =	57	81 =	73	98 =	88
12 =	11	29 =	26	47 =	42	64 =	58	82 =	74	99 =	89
13 =	12			48 =	43			83 =	75		
14 =	13	30 =	27	49 =	44	65 =	59	84 =	76	100 =	90
		31 =	28			66 =	59				
15 =	14	32 =	29	50 =	45	67 =	60	85 =	77		
16 =	14	33 =	30	51 =	46	68 =	61	86 =	77		
17 =	15	34 =	31	52 =	47	69 =	62	87 =	78		

*Consult Table 3 (p. 20) to convert upper extremity impairment to whole-person impairment.

Upper Extremity IR

Table 3, p. 20

Relationship of Impairment of the Upper Extremity to the Whole Person

Table 3. Relationship of Impairment of the Upper Extremity to Impairment of the Whole Person.

% Impairment of Upper extremity		% Impairment of Whole person	% Impairment of Upper extremity		% Impairment of Whole person	% Impairment of Upper extremity		% Impairment of Whole person
0	=	0	35	=	21	70	=	42
1	=	1	36	=	22	71	=	43
2	=	1	37	=	22	72	=	43
3	=	2	38	=	23	73	=	44
4	=	2	39	=	23	74	=	44
5	=	3	40	=	24	75	=	45
6	=	4	41	=	25	76	=	46
7	=	4	42	=	25	77	=	46
8	=	5	43	=	26	78	=	47
9	=	5	44	=	26	79	=	47
10	=	6	45	=	27	80	=	48
11	=	7	46	=	28	81	=	49
12	=	7	47	=	28	82	=	49
13	=	8	48	=	29	83	=	50
14	=	8	49	=	29	84	=	50
15	=	9	50	=	30	85	=	51
16	=	10	51	=	31	86	=	52
17	=	10	52	=	31	87	=	52
18	=	11	53	=	32	88	=	53
19	=	11	54	=	32	89	=	53
20	=	12	55	=	33	90	=	54
21	=	13	56	=	34	91	=	55
22	=	13	57	=	34	92	=	55
23	=	14	58	=	35	93	=	56
24	=	14	59	=	35	94	=	56
25	=	15	60	=	36	95	=	57
26	=	16	61	=	37	96	=	58
27	=	16	62	=	37	97	=	58
28	=	17	63	=	38	98	=	59
29	=	17	64	=	38	99	=	59
30	=	18	65	=	39	100	=	60
31	=	19	66	=	40			
32	=	19	67	=	40			
33	=	20	68	=	41			
34	=	20	69	=	41			

Upper Extremity IR

Methods for Evaluating Impairment

DIGITS

- ROM
- Amputation
- Sensory loss of digits (2 –point discrimination)
- Other Digit Disorders (under 3.1m) - These DO combine with the other factors of digit impairment
  - Rotational deformity
  - Lateral Deviation

Upper Extremity IR

Methods for Evaluating Impairment

UPPER EXTREMITY ABOVE the DIGITS

- ROM
- Peripheral nerve disorders
  - Cervical Spinal Nerve Roots (Table 13)
  - Brachial Plexus (Table 14)
  - Major Peripheral Nerves (Table 15)
- Vascular Disorders
- Amputation

- "Other Disorders" (Section 3.1m) - mostly when no other criteria above are appropriate – most of these DO NOT combine with other UE impairment

Upper Extremity IR

Remember this: **Use Figure 1!**

AMA Guides

Pages 16 and 17

UPPER EXTREMITY IR

FIGURE 1 – Part 1

Figure 1. Upper Extremity Impairment Evaluation Record**—Part 1 (Hand) Side ☐ R ☐ L

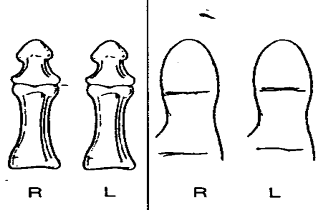
Name____ Age____ Sex ☐ M ☐ F Dominant hand ☐ R ☐ L Date____

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%

Thumb

			Flexion	Extension	Ankylosis	IMP%
IP		Angle°				
		IMP%				
MP		Angle°				
		IMP%				
			Motion		Ankylosis	IMP%
CMC	Radial abduction	Angle°				
		IMP%				
	Adduction	CMS				
		IMP%				
	Opposition	CMS				
		IMP%				

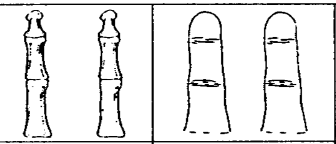


Add impairment % CMC + MP + IP = [1] | IMP % = [2] | IMP % = [3] | IMP % = [4]

Abnormal motion	[1]	
Amputation	[2]	
Sensory loss	[3]	
Other disorders	[4]	
Digit impairment % • Combine 1, 2, 3, 4		
Hand impairment % ***Convert above**		

Index

		Flexion	Extension	Ankylosis	IMP%
DIP	Angle°				
	IMP%				
PIP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				

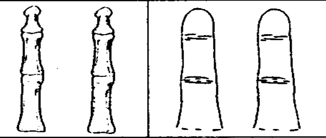


• Combine impairment % MP + PIP + DIP = [1] | IMP % = [2] | IMP % = [3] | IMP % = [4]

Abnormal motion	[1]	
Amputation	[2]	
Sensory loss	[3]	
Other disorders	[4]	
Digit impairment % • Combine 1, 2, 3, 4		
Hand impairment % ***Convert above**		

Middle

DIP	Angle°				
	IMP%				
PIP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				

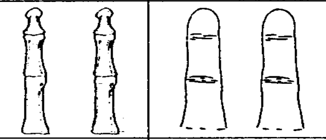


• Combine impairment % MP + PIP + DIP = [1] | IMP % = [2] | IMP % = [3] | IMP % = [4]

Abnormal motion	[1]	
Amputation	[2]	
Sensory loss	[3]	
Other disorders	[4]	
Digit impairment % • Combine 1, 2, 3, 4		
Hand impairment % ***Convert above**		

Ring

DIP	Angle°				
	IMP%				
PIP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				

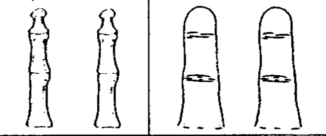


• Combine impairment % MP + PIP + DIP = [1] | IMP % = [2] | IMP % = [3] | IMP % = [4]

Abnormal motion	[1]	
Amputation	[2]	
Sensory loss	[3]	
Other disorders	[4]	
Digit impairment % • Combine 1, 2, 3, 4		
Hand impairment % ***Convert above**		

Little

DIP	Angle°				
	IMP%				
PIP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				



• Combine impairment % MP + PIP + DIP = [1] | IMP % = [2] | IMP % = [3] | IMP % = [4]

Abnormal motion	[1]	
Amputation	[2]	
Sensory loss	[3]	
Other disorders	[4]	
Digit impairment % • Combine 1, 2, 3, 4		
Hand impairment % ***Convert above**		

Total hand impairment (Add hand impairment % for thumb + index + middle + ring + little finger) = %

Upper extremity impairment (†Convert total hand impairment % to upper extremity impairment %) = %; enter on Part 2, Line II

If hand region impairment is only impairment, convert upper extremity impairment to whole-person impairment:‡ = %

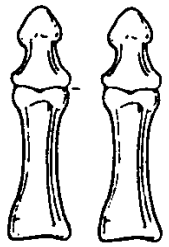
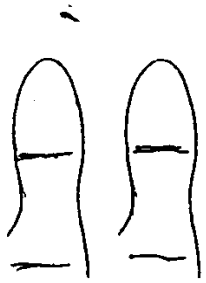
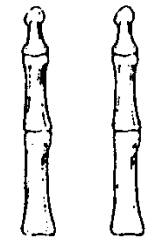
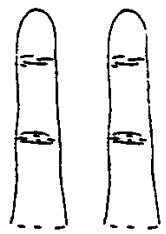
• Combined Values Chart; (p. 322-324) *Use Table 1 (Digits to hand p. 18); †Use Table 2 (Hand to upper extremity p. 19) ‡Use Table 3 (p. 20)

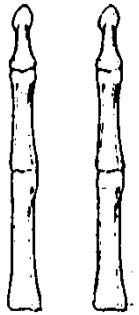
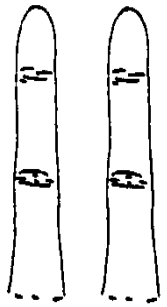
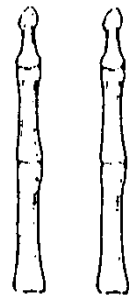
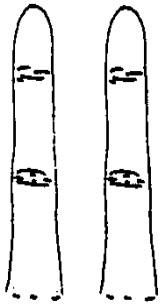
** Courtesy of G. de Groot Swanson, MD

Figure 1. Upper Extremity Impairment Evaluation Record**–Part 1 (Hand) Side ☐ R ☐ L

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

Occupation _____ Diagnosis _____

Abnormal motion Record motion, ankylosis, and impairment %						Amputation Mark level & impairment %	Sensory loss Mark type, level, & impairment %	Other disorders List type & impairment %	Hand impairment% • Combine digit IMP% *Convert to hand IMP%
			Flexion	Extension	Ankylosis	IMP%				
Thumb	IP	Angle°					 R L	 R L		
		IMP%								
	MP	Angle°								
		IMP%								
				Motion	Ankylosis	IMP%				
	CMC	Radial abduction	Angle°							Abnormal motion [1]
			IMP%							Amputation [2]
		Adduction	CMS							Sensory loss [3]
			IMP%							Other disorders [4]
		Opposition	CMS							Digit impairment % • Combine 1, 2, 3, 4
			IMP%							
Add impairment % CMC + MP + IP =						[1]	**IMP % =** [2]	**IMP % =** [3]	**IMP % =** [4]	**Hand impairment %** ***Convert above**
			Flexion	Extension	Ankylosis	IMP%				
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**
		Angle°								Abnormal motion [1]

• Combine impairment % MP + PIP + DIP =						IMP % =	IMP % =	IMP % =	*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%									
					[1]		[2]	[3]	[4]	**Hand impairment %** *Convert above	
• Combine impairment % MP + PIP + DIP =						IMP % =	IMP % =	IMP % =			
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%									
					[1]		[2]	[3]	[4]	**Hand impairment %** *Convert above	
• Combine impairment % MP + PIP + DIP =						IMP % =	IMP % =	IMP % =			

Total hand impairment (Add hand impairment % for thumb + index + middle + ring + little finger) = %
Upper extremity impairment (†Convert total hand impairment % to upper extremity impairment %) = %; enter on Part 2 , Line II
If hand region impairment is only impairment, convert upper extremity impairment to whole-person impairment:‡ = %

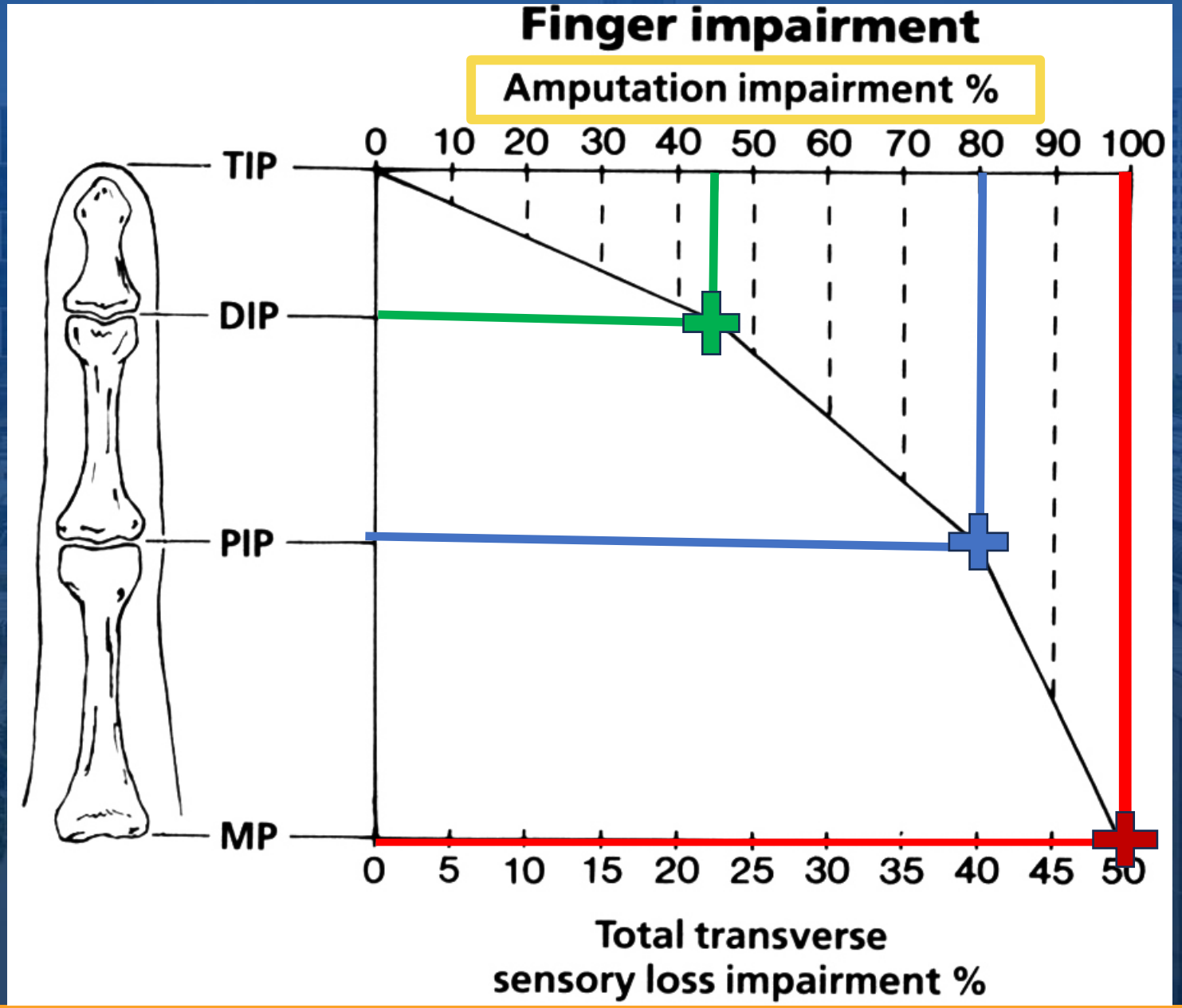
• Combined Values Chart; (p. 322-324) *Use Table 1 (Digits to hand p. 18); †Use Table 2 (Hand to upper extremity p. 19) ‡Use Table 3 (p. 20)

* Courtesy of G. de Groot Swanson, MD

Amputation
Figure 17, pg. 30

CALCULATE AMPUTATION

- DIP Joint
  - = 45 % of length of digit
  - = 45 % of the digit IR
- PIP Joint
  - = 80 % of length of digit
  - = 80 % of the digit IR
- MP joint
  - = 100% length of digit
  - = 100 % of the digit IR



Sensory Loss of Digits

Determine **TYPE** of Loss (CHAPTER 3 - page 21)

- TRANSVERSE

  [Figures 7 and 17]

- LONGITUDINAL
- [Tables 8 and 9]]

- Use when BOTH the Radial and Ulnar digital nerve have loss at the SAME level

  ****

- Use when there is:
  - Only ONE of the digital nerves with loss
  - When BOTH Radial and Ulnar Digital nerves have losses, BUT at different levels

Sensory Loss of Digits

Determine **QUALITY** of Loss (CHAPTER 3 - page 21)

Determine by two-point discrimination exam

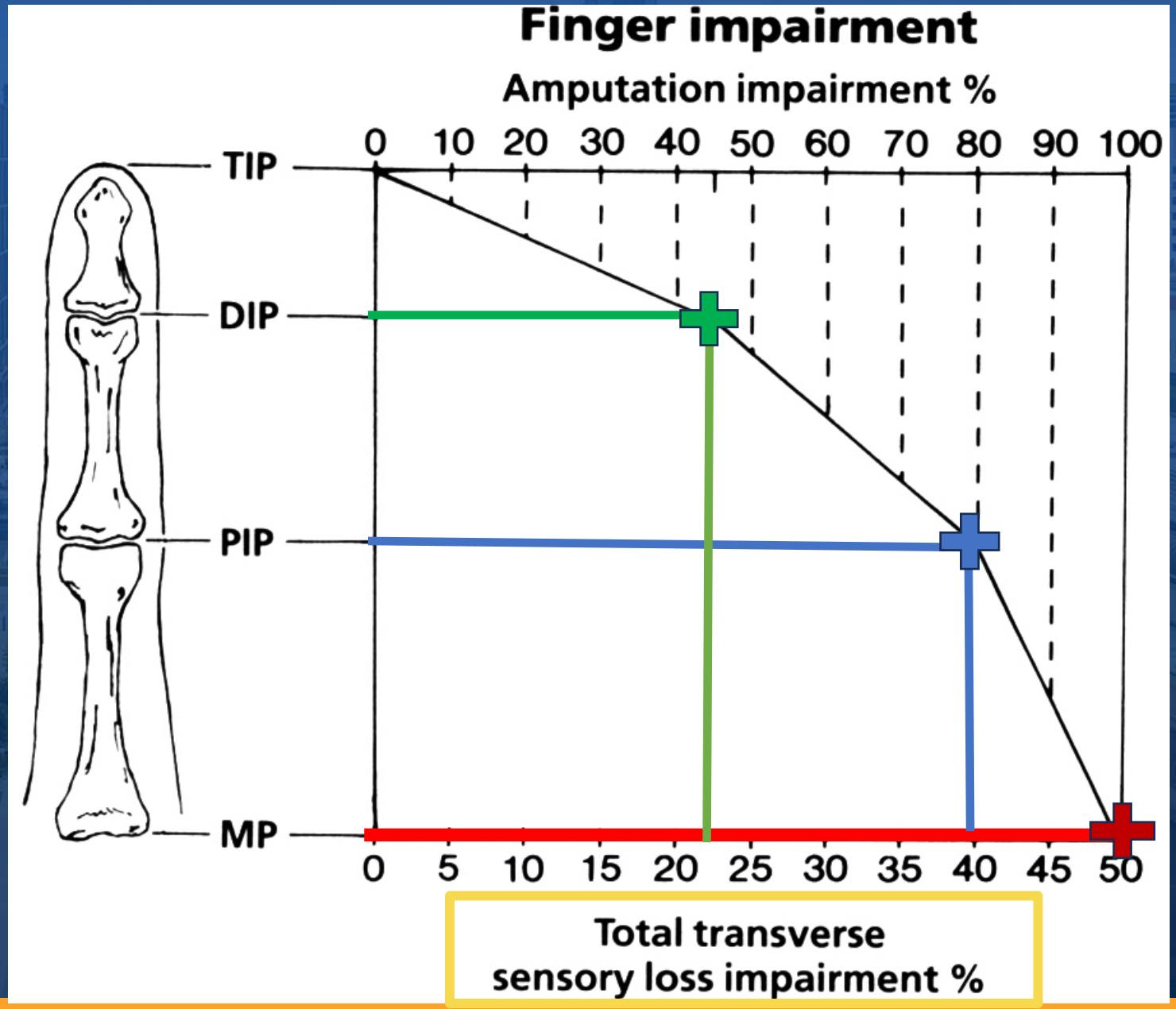
- > 15 mm = TOTAL sensory loss
- 15 mm - 7 mm = PARTIAL sensory loss
- ≤ 6 mm = NORMAL

- 100% sensory impairment
- 50% sensory impairment
- 0% sensory impairment

Amputation Figure 17, pg. 30

CALCULATE TOTAL TRANSVERSE SENSORY LOSS

- DIP Joint
  - = 45 % of length of digit
  - = 22.5 % Sensory Loss*
- PIP Joint
  - = 80 % of length of digit
  - = 40 % Sensory Loss*
- MP joint
  - = 100% length of digit
  - = 50 % Sensory Loss*



Transverse Sensory Loss

IF the TRANSVERSE SENSORY LOSS is TOTAL

- Then use the value on the bottom of Figure 17 (or Figure 7 for the thumb)

IF the TRANSVERSE SENSORY LOSS is PARTIAL

- Then use the value on the bottom of Figure 17 (or Figure 7 for the thumb) AND divide by TWO.
- The value is ½ the value at the bottom of Figure 17 / Figure 7

How do we determine if the sensory loss is

Total? Partial? Normal?

Longitudinal Sensory loss

Thumb & Little finger

Table 8. Longitudinal Sensory Loss Impairment for the *Thumb* and *Little Finger* Based on Percent of Digit Length Involved (values are expressed as percent of digit impairment).

Percent of digit length	Longitudinal sensory loss %			
	Ulnar digital nerve		Radial digital nerve	
	Total loss	Partial loss	Total loss	Partial loss
100	30	15	20	10
90	27	14	18	9
80	24	12	16	8
70	21	11	14	7
60	18	9	12	6
50	15	8	10	5
40	12	6	8	4
30	9	5	6	3
20	6	3	4	2
10	3	2	2	1

Longitudinal Sensory Loss

Index, Middle, & Ring fingers

Table 9. Longitudinal Sensory Loss Impairment of *Index*, *Middle*, and *Ring Fingers* Based on the Percent of Digit Length Involved (values are expressed as percent of finger impairment).

Percent of digit length	Longitudinal sensory loss (%)			
	Ulnar digital nerve		Radial digital nerve	
	Total loss	Partial loss	Total loss	Partial loss
100	20	10	30	15
90	18	9	27	14
80	16	8	24	12
70	14	7	21	11
60	12	6	18	9
50	10	5	15	8
40	8	4	12	6
30	6	3	9	5
20	4	2	6	3
10	2	1	3	2

Upper Extremity Digit Impairment - OTHER

This is from Section 3.1m, page 58 of the AMA Guides, 4th Edition.

- There are TWO situations in which you may consider Section 3.1m for the digits and they will COMBINE with the other digit impairments
- These are for
  - Lateral DEVIATION, pg. 59 –
    - ✓ Evaluated when the digits are fully extended
  - ROTATIONAL DEFORMITY, pg. 59
    - ✓ Evaluated with the fingers flexed

Upper Extremity – Digit Impairment - OTHER

Table 21. Impairment from Digit Ulnar or Radial Deviation.*

Deviation	% Digit impairment †
Mild: less than 10°	10
Moderate: 10° through 30°	20
Severe: Greater than 30°	30

*Modified from Swanson, AB, Mays, JD, Yamauchi, Y[35], p. 1011, Fig. 9.

†Multiply by the relative value of the digit (Table 18, p. 58) to determine the digit impairment.

Table 22. Impairment from Digit Rotational Deformity.*

Digit rotational deformity	% Digit impairment †
Mild: less than 15°	20
Moderate: 15° through 30°	40
Severe: greater than 30°	60

*Adapted from Swanson, AB[35], p. 1011, Fig. 9.

†Multiply the percent of impairment by the relative value of the digit (Table 18, p. 58) to determine the digit rotation deformity impairment percent.

The degree of deviation or rotation is multiplied by the RELATIVE VALUE of the digit from Table 18 on page 58 to determine the digit impairment

Upper Extremity

The Four Exceptions to Combining

Thumb Range of Motion

- **1**. Add impairment percentages for ROM within a thumb joint
- **2.** Add impairment percentages for ROM from joint to joint in the thumb.

Longitudinal Sensory Loss

- **3**. Add impairment percentages for longitudinal loss of sensation is present on more than one side of a digit

Digit values converting to Hand

- **4**. Add each of the digit impairment percentages at the hand value to determine the total hand percentage

Questions about DIGIT Impairments and Figure 1 – Part 1?

UPPER EXTREMITY

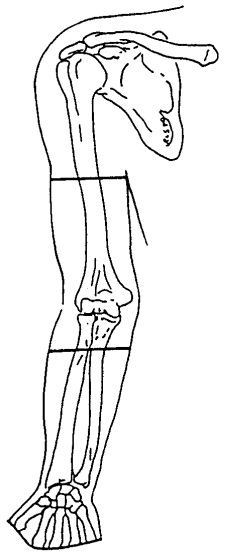
FIGURE 1 – Part 2

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, elbow, and shoulder)** Side ☐ R ☐ L

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

Occupation _____ Diagnosis _____

	Abnormal motion				Other disorders	Regional impairment %	Amputation
	Record motion, ankylosis and impairment %				List type & impairment %	• Combine [1] + [2]	Mark level & impairment %
Wrist	Flexion	Extension	Ankylosis	IMP%			
	Angle°						
	IMP%						
	RD	UD	Ankylosis	IMP%			
	Angle°						
	IMP%						
	Add IMP% F/E + RD/UD =			[1]	**IMP% =**	[2]	
Elbow	Flexion	Extension	Ankylosis	IMP%			
	Angle°						
	IMP%						
	Pro	Sup	Ankylosis	IMP%			
	Angle°						
	IMP%						
	Add IMP% F/E + PRO/SUP =			[1]	**IMP% =**	[2]	
Shoulder	Flexion	Extension	Ankylosis	IMP%			
	Angle°						
	IMP%						
	Add	Abd	Ankylosis	IMP%			
	Angle°						
	IMP%						
	Int Rot	Ext Rot	Ankylosis	IMP%			
	Angle°						
	IMP%						
	Add IMP% F/E + Add/Abd + IR/ER =			[1]	**IMP% =**	[2]	**IMP %**



I. Amputation impairment (other than digitis)	=
II. Regional impairment of upper extremity • (Combine hand ____% + wrist ____% + elbow ____% + shoulder ____%)	=
III. Peripheral nerve system impairment	=
IV. Peripheral vascular system impairment	=
V. Other disorders (not included in regional impairment)	=
Total upper extremity impairment (• Combine I + II + III + IV + V)	=
Impairment of the whole person (Use Table 3 p. 20)	=

If both limbs are involved, calculate the whole-person impairment for each on a separate chart and *combine* the percents (Combined Values Chart).

Upper Extremity

MOST OFTEN

- Upper Extremity Impairment will be addressed by active ROM
- They are recorded in the column to the LEFT of Figure 1 – Part 2.
- Ensure that the ROMs are plausible based on the other facts of the case.

UPPER EXTREMITY IR

FIGURE 1 – Part 2

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, elbow, and shoulder)** Side ☐R ☐L

Name_____ Age_____ Sex ☐M ☐F Dominant hand ☐R ☐L Date_____

Occupation_____ Diagnosis_____

	Abnormal motion				**Other disorders**	**Regional impairment %**	**Amputation**
	Record motion, ankylosis and impairment %				List type & impairment %	• Combine [1] + [2]	Mark level & impairment %
Wrist	Flexion	Extension	Ankylosis	IMP%			
Angle°							
IMP%							
	RD	UD	Ankylosis	IMP%			
Angle°							
IMP%							
Add IMP% F/E + RD/UD =				[1]	**IMP% =**	[2]	
Elbow	Flexion	Extension	Ankylosis	IMP%			
Angle°							
IMP%							
	Pro	Sup	Ankylosis	IMP%			
Angle°							
IMP%							
Add IMP% F/E + PRO/SUP =				[1]	**IMP% =**	[2]	
	Flexion	Extension	Ankylosis	IMP%			
Angle°							
IMP%							

FIGURE 1 – Part 2

IF there is **DIGIT** impairment – after converting to HAND value – insert under Section II.

I. Amputation impairment (other than digitis)	=
II. Regional impairment of upper extremity • (Combine hand _____% + wrist _____% + elbow _____% + shoulder _____%)	=
III. Peripheral nerve system impairment	=
IV. Peripheral vascular system impairment	=
V. Other disorders (not included in regional impairment)	=
Total upper extremity impairment (• Combine I + II + III + IV + V)	=
Impairment of the whole person (Use Table 3 p. 20)	=

If both limbs are involved, calculate the whole-person impairment for each on a separate chart and *combine* the percents (Combined Values Chart).

Range of Motion

Measuring ROM - Correct & Methods

The AMA *Guides*:

Figure 6, pg. 23
Figure 8, pg. 25
Figure 11, pg. 27
Figure 14, pg. 28
Figure 15, pg. 29
Figure 16, pg. 29
Figure 18, pg. 32
Figure 20, pg. 33
Figure 22, pg. 34
Figure 24, pg. 36
Figure 27, pg. 37
Figure 30, pg. 39
Figure 33, pg. 40
Figure 36, pg. 42
Figure 39, pg. 43
Figure 42, pg. 49

These will be presented in hands on format in the afternoon skills workshop

Upper Extremity
Section 3.1m - Other Disorders

These are not commonly used but should be reviewed.

- These are recorded in the column to the RIGHT of the column that records ROM on Figure 1 – Part 2. Denoted as “Other Disorders”.
- In most cases, the chosen value from the Tables 19 – 30, are multiplied by the Relative Value of a specific joint as per Table 18

Upper Extremity
Section 3.1m - Other Disorders

"It is emphasized that impairments from the disorders considered in the section are usually estimated by using other criteria".

*"The criteria described in this section should be used **only** when the other criteria have not adequately encompassed the extent of the impairments."*

Section 3.1m, page 58 AMA Guides, 4th Edition

Upper Extremity Other Disorders
Section 3.1m

When to use Section 3.1m:

- Occasions that ROM losses do not adequately explain the functional loss to an upper extremity functional unit.
- Digit impairment assessments that allow combining rotational or lateral deviation deformities to ROM or other digit losses
- Resection or replacement arthroplasties
- Other miscellaneous considerations (a later case)

Any Questions on basic Upper Extremity IR?

Any Questions on basic Upper Extremity IR?

LOWER EXTREMITY IMPAIRMENT

Subtitle

Lower Extremity IR

- Understand the 13 methods for determining lower extremity IR, and which of the 13 methods can be combined.

- Review LE Guides Section 3.2 and DD 101 “pearls”.

Determining an Impairment Rating for the Lower Extremity

- **An impairment for the lower extremity is derived from the following methods:**

  - **ANATOMIC**
  - **DIAGNOSTIC**
  - **FUNCTIONAL**

  (Page 75)

- Like the upper extremity, impairments of different regions (foot / ankle / knee / hip) are combined
- Each region can be addressed by the different methods
- Different systems are combined (MSK / vascular / nerve)

Determining an Impairment Rating for the Lower Extremity

- All tables show impairment percentages in lower extremity (LE) and whole person (WP)
- Impairment values are expressed and **combined at the WHOLE PERSON level**, for the same LE part (i.e. ankle) or for different parts of the LE (i.e. ankle and knee)
- This includes combining within a joint (APD 211091-s)

Determining an Impairment Rating for the Lower Extremity

- **The lower extremity is weighted at 40% whole person**
- The final impairment rating CANNOT exceed the amputation value (hip disarticulation – Table 39), as per APD 111720
- Lower extremity impairments that **exceed** 40% of the whole person are rated at the amputation value of 40% whole person
- The max value for BOTH lower extremities is 64%
  - 40% WP for one LE is COMBINED with 40% WP for the other LE% = 64% WP

Determining an Impairment Rating for the Lower Extremity

- Section 3.2, page 75
- *"If the patient has several impairments of the same lower part, such as the leg, or impairments of different anatomic parts, such as the ankle and a toe, the whole person estimates are* ***combined.*****"** (Combined Values Chart, p. 322)
- New APD 211091-s finds that this includes COMBINING ROM impairments within the same joint (lower extremity ONLY)

Determining an Impairment Rating for the Lower Extremity

- The impairment is calculated according to text and tables for each applicable parameter of the 13 possible methods
- Determine which parameters can be combined
- Select the largest and ***most clinically appropriate*** method for each region
- Per 4th Edition Guides, ***"The physician, in general, should decide which estimate best describes the situation and should use only one approach for each anatomical part."*** *(p. 84)*

Methods for Determining Lower Extremity Impairment Rating

1. Limb length discrepancy (T. 35, p. 75)
2. Muscle atrophy (T. 37, p. 77)
3. Muscle strength (T. 38 and 39, p. 77)
4. Range of motion (T. 40-45, p. 78)
5. Ankylosis (T. 46-61, pp. 79-82)
6. Arthritis aka “DJD” (T. 62, p. 83)
7. Amputation (T. 63, p. 83)
8. Diagnosis Based Estimates – fractures, deformities, dislocations, ligament instability, bursitis, surgical procedures (T. 64, 65, & 66, pp. 85-88)

13 Methods for Determining Lower Extremity Impairment Rating

9. Skin loss (T. 67, p. 88)
10. Peripheral nerve injuries (T. 68, p. 89)
11. Causalgia and RSD/CRPS (p. 89)
    (see p. 56 for UE RSD discussion)
13. Vascular disorders (T. 69, p. 89)

The last 4 of the 13 are non-musculoskeletal – OTHER body systems.

Therefore they can be combined with one another AND with the MSK methods

To Combine or Not to Combine…

- Range of motion impairments are not to be combined with impairments from atrophy (see comment, pg. 78)

- The examiner should choose the impairment that is most clinically relevant to the injury that is being rated.

- **Explain your rationale in your report.**

To Combine or Not to Combine…

- An impairment due to atrophy is not to be combined with a diagnosis-based estimate.

- Per the comment on page 84 related to Table 64: *"The expected muscle weakness or atrophy is included in the diagnosis-based estimates."*

- **Explain your rationale in your report.**

To Combine or Not to Combine…

- Range of motion impairments are not to be combined with a DBE.
- There is an exception in cases of malunion or nonunion of a femoral neck fracture (Table 64).
- In this exception:
  - The DBE impairment is assigned
  - The impairment from ROM loss is COMBINED with the DBE impairment (see page 85)

To Combine or Not to Combine…

- **Instances where impairments <u>can</u> and <u>should</u> be combined include:**
  - DBE for an intra-articular fracture in Table 64 IS combined with an impairment for cartilage interval loss from Table 62 (Page 83)
  - Impairment for malalignment of a fracture with shortening of the affected limb due to the fracture are combined (See example on page 84)
  - Impairments for two different body systems such as an acetabular fracture with a sciatic nerve injury are combined (Page 84).

To Combine or Not to Combine…

Instances where impairments can and should be combined include:

- Two different ligamentous injuries (collateral AND cruciate) are combined
- Ligamentous injury with meniscectomy are combined
- Fracture and ligamentous injury or meniscus injury (I.e. tibial plateau and meniscus) are combined
- **This methodology applies as long as ALL impairments are in Table 64 and within a specific joint.**

13 Methods for Determining Lower Extremity Impairment Rating

Let's look at the specific subsections of Chapter 3.2

Leg Length Discrepancy

Section 3.2a: Limb Length Discrepancy – Table 35, page 75

- This methodology is difficult to use in individuals with:
  - Pelvic angulation
  - Knee flexion contracture
  - Significant ankle edema
- Can assess with CT for leg length (CPT 77073).
  - Tape measure and/or iliac crest level is not recommended.
- **Discrepancy must be 2 cm or greater to rate > 0%**

Some Lower Extremity Tables for Different Impairment Methods

Limb Length, page 75

Table 35. Impairment from Limb Length Discrepancy.

Discrepancy (cm)	Whole-person (lower extremity) impairment (%)
0-1.9	0
2-2.9	2-3 (5-9)
3-3.9	4-5 (10-14)
4-4.9	6-7 (15-19)
5+	8 (20)

Gait Derangement

Section 3.2b: Gait Derangement – Table 36

- The text on page 75 states,
  - *"Whenever possible, the evaluator should use the **more specific methods** of those other parts in estimating impairment."*
  - This impairment, *"Does not apply to abnormalities based only on subjective factors, such as pain or sudden giving way"*

Gait Derangement

- **Section 3.2b: Gait Derangement – Table 36**
- The text on page 75 states**,**
  - *"Whenever possible, the evaluator should use the **more specific methods** of those other parts in estimating impairment."*
  - This impairment, *"Does not apply to abnormalities based only on subjective factors, such as pain or sudden giving way."*

Gait Derangement

- **Section 3.2b: Gait Derangement – Table 36**
- To be an impairment, the Guides state that it MUST be permanent.
- Section 3.2b does not apply to abnormalities based only on subjective factors, such as pain or sudden giving-way, as with, for example, a patient with low-back discomfort who chooses to use a cane to ease walking.
- This impairment is not combined with any other lower extremity impairment from 3.2a to 3.2i.

Lower Extremity Tables

Gait Derangement, page 76

Table 36. Lower Limb Impairment from Gait Derangement.

Severity	Patient's signs	Whole-person impairment (%)
Mild	a. Antalgic limp with shortened stance phase and documented moderate to advanced arthritic changes of hip, knee, or ankle	7
	b. Positive Trendelenberg sign and moderate to advanced osteoarthritis of hip	10
	c. Same as category a or b above, but patient requires part-time use of cane or crutch for distance walking but not usually at home or in workplace	15
	d. Requires routine use of short leg brace (ankle-foot orthosis [AFO])	15
Moderate	e. Requires routine use of cane, crutch, or long leg brace (knee-ankle-foot orthosis [KAFO])	20
	f. Requires routine use of cane or crutch *and* a short leg brace (AFO)	30
	g. Requires routine use of two canes *or* two crutches	40
Severe	h. Requires routine use of two canes or two crutches *and* a short leg brace (AFO)	50
	i. Requires routine use of two canes *or* two crutches *and* a long leg brace (KAFO)	60
	j. Requires routine use of two canes *or* two crutches *and* two lower-extremity braces (either AFOs or KAFOs)	70
	k. Wheelchair dependent	80

Issues With Using Gait Derangement

- **Section 3.2b: Gait Derangement - Table 36**
- For an impairment from Table 36 to be assigned, the first requirement under a MILD lower limb gait derangement (sections a – c) is that there is, "*documented moderate to advanced arthritic changes to the hip, knee, or ankle"*
- While not specifically stated under in the MODERATE and SEVERE categories, an appropriate assumption would be that the higher categories would require this component as well.
- The example on page 75 supports that there must at least be moderate osteoarthritis and specific gait changes as a result.

Issues With Using Gait Derangement

- **Section 3.2b: Gait Derangement - Table 36**
- Remember that the final lower extremity impairment cannot exceed the impairment estimate from amputation of 100% of one extremity = 40 % WPI.
- Note that ALL values in the severe category on Table 36 exceed the amputation value of one LE of 40 %.
- Even if both lower extremities were amputated at the level of the hip, the combined WP value would be 64%.
- Therefore 80% for wheelchair dependent is NOT plausible or supported by the Guides in the written text.
- **See APD 111720**

Muscle Atrophy

Section 3.2c: Muscle Atrophy (unilateral) - Table 37

- If clinically applicable assigning an impairment rating for unilateral muscle atrophy may be appropriate.
- For a muscle atrophy impairment to be valid, *"Neither limb should have swelling or varicosities that would invalidate the measurements."* (Page 76)

Lower Extremity Tables

Leg Muscle Atrophy, page 77

Table 37. Impairments from Leg Muscle Atrophy.

Difference in circumference (cm)	Impairment degree	Whole-person (lower extremity) impairment (%)
a. Thigh: The circumference is measured 10 cm above the patella with the knee fully extended and the muscles relaxed.		
0 - 0.9	None	0
1 - 1.9	Mild	1 - 2 (3 - 8)
2 - 2.9	Moderate	3 - 4 (8 - 13)
3+	Severe	5 (13)
b. Calf: The maximum circumference on the normal side is compared with the circumference at the same level on the affected side.		
0 - 0.9	None	0
1 - 1.9	Mild	1 - 2 (3 - 8)
2 - 2.9	Moderate	3 - 4 (8 - 13)
3+	Severe	5 (13)

Muscle Atrophy

- **Section 3.2c: Muscle Atrophy (Unilateral) - Table 37**

  SPECIFIC INSTRUCTIONS

- Per Table 37, the thigh is measured at 10 cm above the patella.
- Per Table 37, the calf is measured at the "*maximal circumference on the normal side" and "compared with the circumference at the SAME level on the affected side.*"

- **Document the location that the maximum circumference of the calf is obtained.**

Muscle Weakness

Section 3.2d: Manual muscle testing - Table 39

- *"Findings varying by more than one grade between observers, or such findings made by the same observer on separate occasions are not valid."* (Page 76)
- *"Patients whose performance is inhibited by pain or fear of pain are not good candidates for using MMT."* (Page 76)
- *AND....*

Range of Motion

Section 3.2e: Range of motion – Tables 40 to 45

Page 14 documents

- *"Evaluating the range of motion of an extremity or the spine is a valid method of estimating an impairment. To some extent, however, the ROM is subject to the patient's control".*
- *The results of such evaluations should be consistent and concordant with the presence or absence of pathologic signs and other evidence."*

Range of Motion

- **Section 3.2e: Range of Motion**

- This is supported by evidence elsewhere in the Guides.
- "*Active range of motion is determined with the patient's full effort and cooperation.*" (*Chapter 3, page* 14)
- "*Comparing the patient's active range of motion with the passive range of motion provides useful information.*" (*Chapter 3, page* 14)

- **Don’t take the measurements obtained during your exam at face value.**

Range of Motion

- **Section 3.2e: Range of motion – Tables 40 to 45**
- The ROM findings must make sense based on the injury.
- Variability of ROM on any given day would be expected, **BUT be suspicious of:**
  - Wide swings of ROM
  - Evidence of mismatch of ROM with functional activities observed in the exam room or documented in the records
  - Passive motion far greater than active motion without an associated nerve injury

Range of Motion

Appeals Panel Decision 132734, filed 01/09/14

- Section 3.2e does not require that a certifying doctor must **only use the most severe** impairment for range of motion within the same table. (Tables 40 through 43)
- There is no provision in the Act or Rules that adopts the AMA Guides Casebook to determine the existence and degree of an employee's impairment.
- *"There is no specific provision in the AMA Guides in the lower extremity section that restricts ROM deficits in multiple directions…"*

Range of Motion

- The use of one or more ROM within a joint is within the discretion of the certifying doctor, per APD 132734
- The impairment rating should be clinically appropriate (Pages 8,14 and 77)
- **SHOW YOUR WORK!**
  - Describe how you calculated the IR and why you chose the method you used

Remember to **combine** impairments - including within the same joint, per **APD 211091-s**, filed 9/10/21

Range of Motion

Measuring ROM - Correct & Alternate Methods

The AMA *Guides:*

- Figures 52 and 53 on page 90
- Figures 54, 55, 56 on page 91
- Figures 58 on page 92

These will be presented in hands on format in the afternoon skills workshop

ANKYLOSIS

Section 3.2f: Ankylosis – Tables 40 to 45

- This is NOT a common form of impairment
- However, it is important to know how to calculate.
- The hip and knee have the opportunity for joint replacement, so ankylosis will most often be at the ankle.

Ankylosis

- **Section 3.2f: Ankylosis – Tables 40 to 45**
- Each joint has a baseline position of optimum ankylosis. This is the **base impairment value**
- Deviations from the optimum are assigned additional impairment from Table 46 to 59
- **For the ankle:**
    - The first plane of motion with deviation from optimum is ADDED to the base value
    - Any additional deviation in a second plane of motion is COMBINED
    - See example on page 81 of the 4th Edition AMA Guides

Ankylosis

- **Section 3.2f: Ankylosis – Tables 40 to 45**

- Follow instructions on relevant Tables for the hip and knee.
- The text on page 80 for the knee states," *Impairments beyond those of the neutral position are ADDED according to tables 51 through 54*".
- No examples to follow for the hip or knee.
- EXPLAIN WHAT YOU DID, citing relevant material from the Guides.

Ankylosis

- **Section 3.2f: Ankylosis – Base for:**
- **Hip = 20% WPI**
  - **[25 – 40 degrees of flexion + neutral EX/IR/ER/ADD/ABD]**
- **Knee = 27% WPI**
  - **[10 – 15 degrees of flexion with good alignment]**
- **Ankle = 4% WPI**
  - **[Neutral without FLEX / EXT / VARUS / VALGUS]**
- **Foot = 4 % WPI (Hindfoot, Midfoot, Forefoot)**
  - **[Subtalar neutral is 0 degrees without VARUS / VALGUS]**

Ankylosis

- **Section 3.2f: Ankylosis – Tables 40 to 45**
- Follow instructions at the bottom of the relevant Tables for the hip and knee.

- The Tables 46 to 50 for the hip and Tables 51 – 54 for the knee have footnotes that state "*The appropriate ankylosis impairment is ADDED to the impairment percent for the ankylosis in the neutral position from the text*".

- The text on page 79 for the hip states, "*impairment estimates for extension, abduction and adduction are COMBINED*".

ARTHRITIS

Section 3.2g: Arthritis – Table 62

- Per the Guides,*" ROM techniques are of limited value for estimating impairment due to arthritis."*
- *"For most patients, X-ray grading is a more objective and valid method for assigning impairment estimates than physical findings, such as the ROM or joint crepitation." (Page 82)*
- Table 62 is based on residual radiographic cartilage interval
- Text on page 82 describes radiographic techniques for the joints being rated

Lower Extremity Tables

Arthritis, page 83

Table 62. Arthritis Impairments Based on Roentgenographically Determined Cartilage Intervals.

Joint	Whole-person (lower extremity) [foot] impairment (%)			
	Cartilage interval			
	3 mm	2 mm	1 mm	0 mm
Sacroiliac (3 mm)*	—	1 (2)	3 (7)	3 (7)
Hip (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)
Knee (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)
Patellofemoral†	—	4 (10)	6 (15)	8 (20)
Ankle (4 mm)	2 (5) [7]	6 (15) [21]	8 (20) [28]	12 (30) [43]
Subtalar (3 mm)	—	2 (5) [7]	6 (15) [21]	10 (25) [35]
Talonavicular (2 - 3 mm)	—	—	4 (10) [14]	8 (20) [28]
Calcaneocuboid	—	—	4 (10) [14]	8 (20) [28]
First metatarsophalangeal	—	—	2 (5) [7]	5 (12) [17]
Other metatarsophalangeal	—	—	1 (2) [3]	3 (7) [10]

*Normal cartilage intervals are given in parentheses.

†In a patient with a history of direct trauma, a complaint of patellofemoral pain, and crepitation on physical examination, but without joint space narrowing on roentgenograms, a 2% whole-person or 5% lower-extremity impairment is given.

Arthritis

- **Section 3.2g: Arthritis – Table 62**
- Don't forget the footnote of Table 62
- *"In a patient with a history of direct trauma, a complaint of patellofemoral pain, and crepitation on physical examination, but without joint space narrowing on roentgenograms, a 2% whole person or 5% lower extremity impairment is given."*
- This impairment could be applicable for injuries such as falls onto the knee, dashboard impact injuries, or blunt force trauma (hit in the knee with a sledgehammer)

If clinically appropriate can be combined with DBE (ligamentous laxity, meniscus, fracture, etc.) with appropriate explanation that these are all STRUCTURAL injuries.

Amputation

Section 3.2h: Amputation: Table 63

- Table 63 is straightforward – rate the level of the amputation.

PEARL: ***This table can be referenced to give an idea of what a maximum impairment should be for injuries at different levels of the leg.***

Diagnosis-Based Estimates (DBE)

Section 3.2i: Diagnosis-Based Estimates - Table 64

- Diagnosis-based estimates are "stand alone" impairments *
- Diagnosis-based estimates are utilized for STRUCTURAL INJURIES; specific types of fractures, ligamentous injuries, joint replacements, deformities, and meniscus procedures
- ***BE AWARE of EXCEPTIONS***

DBE - JOINT REPLACEMENTS

- **TOTAL HIP AND TOTAL KNEE REPLACEMENTS**

are an ADVANCED CONCEPT

- **PLEASE refer to the**

DD CERTIFICATION COURSE

for the methodology of assigning impairment for these Lower Extremity IR issues

Skin Loss

Section 3.2j: Skin Loss: Table 67

- Full-thickness skin loss about certain areas in the lower extremity results in significant impairment even when the areas are successfully covered with skin graft
- Note that these are VERY specific to situations such as decubitus ulcers and osteomyelitis.
- Seems obvious, but don't use for burns! Burns of the lower extremity (or any area) should be rated as per Chapter 13

Skin Loss – Table 67 on page 88

Table 67. Impairments for Skin Loss.

Description	Whole-person (lower extremity) [foot] impairment (%)
Ischial covering that requires frequent unweighting and limits sitting time	5 (12)
Tibial tuberosity covering that limits kneeling	2 (5)
Heel covering that limits standing and walking time	10 (25) [35]
Plantar surface, metatarsal head covering that limits standing and walking time	
First metatarsal	5 (12) [17]
Fifth metatarsal	5 (12) [17]
Chronic osteomyelitis with active drainage	
Of femur	3 (7) [10]
Of tibia	3 (7) [10]
Of foot, requiring periodic redressing and limiting time using footwear	10 (25) [35]

Peripheral Nerve Injuries

Chapter 3 Method – Section 3.2k. pages 88 and 89 and Table 68.

- Three categories of nerve impairment in the LE
  Motor deficits. Sensory deficits Dysesthesia
- These should be **combined** (text page 88)
- All values listed in Table 68 are for COMPLETE motor or sensory loss for named peripheral nerves
- Also, see APD 101481

Peripheral Nerve Injuries (PNI)

THERE ARE SIGNIFICANT ISSUES with addressing LOWER EXTREMITY PNIs in the AMA Guides 4th Edition.

- **Not all nerve lesions are COMPLETE as per the text on page 88**
  - Not much Guidance as how to approach the incomplete lesions or lesions that have incompletely resolved
- Table 68 has significant problems:
  - Errors of Omission
  - Errors of Anatomy

Peripheral Nerve Injuries

Table 68. Impairments from Nerve Deficits.

	Whole-person (lower extremity) [foot] impairment (%)		
Nerve	**Motor**	**Sensory**	**Dysesthesia**
Femoral	15 (37)	1 (2)	3 (7)
Obturator	3 (7)	0	0
Superior gluteal	25 (62)	0	0
Inferior gluteal	15 (37)	0	0
Lateral femoral cutaneous	0	1 (2)	3 (7)
Sciatic	30 (75)	7 (17)	5 (12)
Common peroneal	15 (42)	2 (5)	2 (5)
Superficial peroneal	0	2 (5)	2 (5)
Sural	0	1 (2)	2 (5)
Medial plantar	2 (5) [7]	2 (5) [7]	2 (5) [7]
Lateral plantar	2 (5) [7]	2 (5) [7]	2 (5) [7]

Peripheral Nerve Injuries

- PERIPHERAL NERVE INJURIES ARE AN ADVANCED CONCEPT.
- THIS WILL BE PRESENTED IN DEPTH IN THE DD CERTIFICATION COURSE

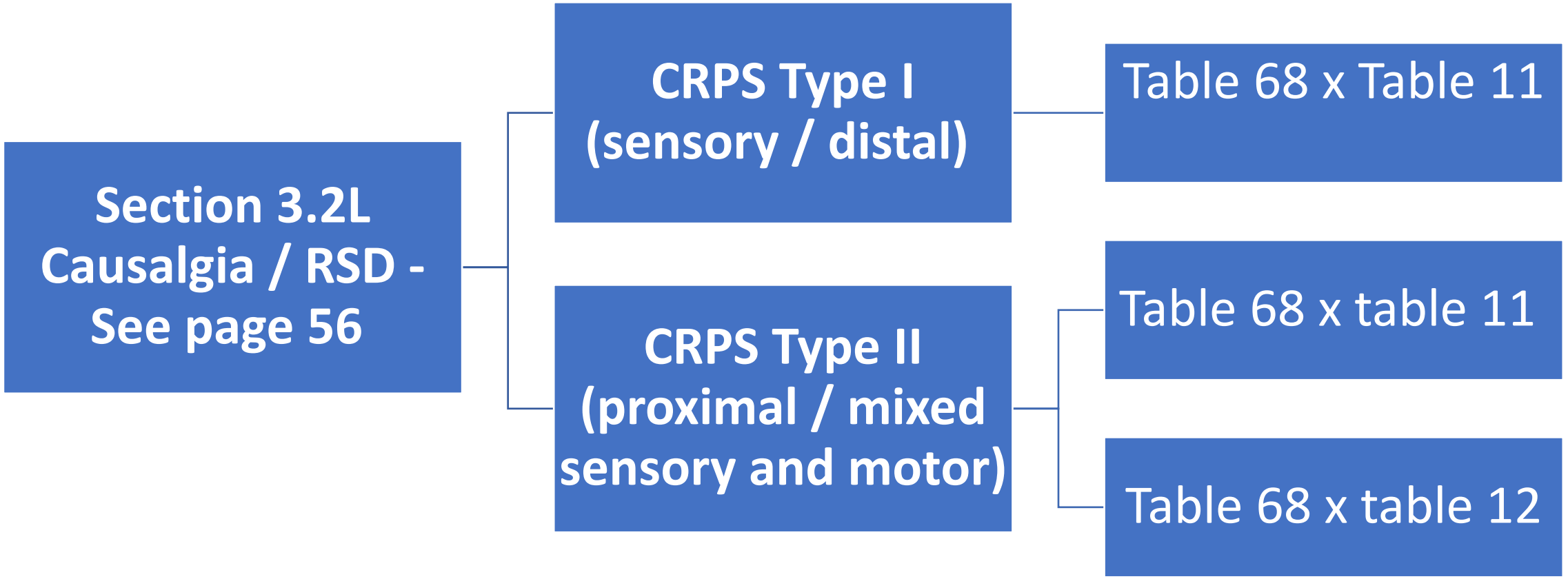
Causalgia / RSD

Section 3.2 I – Text on page 89 (also see page 56 for the UE)

- This is an uncommon diagnosis that you evaluate
- Not in Qualification Table for DCs
- Appropriate Diagnosis is detailed in the ODG.
  - Ensure you follow this diagnostic criteria
  - Alternate diagnoses /conditions are more likely and will obviate the diagnosis of CRPS

Also an advanced concept

Causalgia/RSD



Vascular Disorders

- **3.2M Vascular Disorder – Table 69**
  - Not a common impairment in the lower extremity.
  - More applicable to arterial disease than due to venous stasis, such as due to work related DVT.
  - Since there is a range, explain why you picked the IR % you did based on clinical evidence in the records.
  - As per other non-MSK, use the ADL Table on page 317 to establish the value

Any Questions on Lower Extremity IR?

SPINE IMPAIRMENT

Musculoskeletal IR

Spine IR

- Review Spine Guides Section 3.3 and DD 101 “pearls”.

- Understand the structural inclusions and differentiators in applying the DRE (Diagnosis Related Estimates) model.

Considerations to keep in mind

- Most Spine Impairments fall in DRE I – II, and some reach the threshold for III
- **Be aware of structural inclusions and the functional criteria necessary to reach the threshold for the different criteria**
- DRE IV-VIII are not common
  - Make sure you know how to determine the IR for these categories
  - Some differences in how this is done for the cervicothoracic / thoracolumbar vs lumbosacral
  - These will be covered more in depth in the Certification Course

Impairment Rating
Spine DRE I - Complaints or Symptoms

- No significant clinical findings
- No muscle guarding or history of guarding
- No documented neurologic impairment
- No loss of structural integrity on F/E x-rays
- No indication of impairment related to injury or illness
- No structural inclusions
- 0% whole person impairment

Impairment Rating
Spine DRE II: Minor Impairment

Structural Inclusions

- Compression fracture < 25%
- Non-displaced posterior element fractures
- Transverse or spinous process fracture with displacement in L and C spine; T spine is unclear

5% whole person impairment

Clinical Findings/Differentiators

- Significant intermittent or continuous muscle guarding or spasm or nonuniform loss of range of motion, dysmetria, is present or has been observed and documented by a physician
- Non-verifiable radicular complaints
- No objective signs of radiculopathy
  - loss of relevant reflex(es)
  - 2 cm or greater atrophy with circumferential measurements of relevant extremity
- No loss of structural (motion segment) integrity lateral

  view flexion/extension x-rays

Lower Extremity Tables

Arthritis, page 83

Table 62. Arthritis Impairments Based on Roentgenographically Determined Cartilage Intervals.

Joint	Whole-person (lower extremity) [foot] impairment (%)			
	Cartilage interval			
	3 mm	2 mm	1 mm	0 mm
Sacroiliac (3 mm)*	—	1 (2)	3 (7)	3 (7)
Hip (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)
Knee (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)
Patellofemoral†	—	4 (10)	6 (15)	8 (20)
Ankle (4 mm)	2 (5) [7]	6 (15) [21]	8 (20) [28]	12 (30) [43]
Subtalar (3 mm)	—	2 (5) [7]	6 (15) [21]	10 (25) [35]
Talonavicular (2 - 3 mm)	—	—	4 (10) [14]	8 (20) [28]
Calcaneocuboid	—	—	4 (10) [14]	8 (20) [28]
First metatarsophalangeal	—	—	2 (5) [7]	5 (12) [17]
Other metatarsophalangeal	—	—	1 (2) [3]	3 (7) [10]

*Normal cartilage intervals are given in parentheses.

†In a patient with a history of direct trauma, a complaint of patellofemoral pain, and crepitation on physical examination, but without joint space narrowing on roentgenograms, a 2% whole-person or 5% lower-extremity impairment is given.

Guarding differentiator, Table 71, page 109

- "Paravertebral muscle guarding or spasm or non-uniform loss of motion, dysmetria"
- These terms are not further defined in the Guides, 4th Ed.

Some thoughts on non-uniform loss of ROM, dysmetria

- **Non-uniform loss of ROM**
  - Does this mean asymmetry?
  - One plane of motion? More than one plane?

- **Dysmetria**
  - Lack of coordinated movement
  - How does this apply to spine?

Some thoughts on muscle guarding and spasm

- **Muscle Guarding** is a **voluntary** contraction of a muscle to minimize motion or agitation of the injured or diseased tissue.
  - It is not true muscle spasm because the contraction can be relaxed.
  - In the spine, it may be associated with reproducible loss of motion, which may be non-uniform loss.
- **Muscle Spasm** is a sudden **involuntary** contraction of a muscle or a group of muscles, usually associated with recent injury.
  - To differentiate true muscle spasm from voluntary muscle contraction, the individual should not be able to relax the contractions.
  - The spasm should be present standing as well as in the supine position.

Some thoughts on muscle guarding and spasm

- “SPASM" can be over-utilized and misused, especially in electronic health records (EHRs)
- Spasm is not typically seen at MMI
- Has low inter-rater reliability, sensitivity, specificity and poor validity

DRE I: Complaints or Symptoms
vs.
DRE II: Minor Impairment

There are the DRE differentiators to consider,

and

Rule 130.1(c)(3) "Assignment of an impairment rating for the current compensable injury shall be based on the injured employee's condition on the MMI date…."

DRE I vs. DRE II
What if there is a documented history of differentiators that are not present at MMI?

DRE I

Criteria requires "…no muscle guarding or history of guarding…"

- DRE I for the IE's lack of muscle guarding or loss of range of motion at the time of MMI would comply with Rule 130.1(c)(3)
- But the IE's history of muscle spasms and loss of ROM documented in the records as having occurred prior to MMI would potentially not meet DRE I criteria

DRE Lumbosacral Category I:
Complaints or Symptoms

Description and Verification: The patient has no significant clinical findings, no muscle guarding or history of guarding, no documentable neurologic impairment, no significant loss of structural integrity on lateral flexion and extension roentgenograms, and no indication of impairment related to injury or illness.

Structural Inclusions: None.

Impairment: 0% whole-person impairment.

DRE I vs. DRE II

What if there is a documented history of differentiators that are not present at MMI?

DRE II

Criteria states, "...may include significant intermittent or continuous muscle guarding that has been observed and documented by a physician, nonuniform loss of range of motion...

- The IE's documented history of muscle spasm and loss of range of motion prior to MMI would potentially meet DRE II criteria
- The IE's lack of muscle spasm and loss of range of motion at the time of MMI, would potentially not comply with Rule 130.1(c)(3)

DRE Lumbosacral Category II: Minor Impairment

Description and Verification: The clinical history and examination findings are compatible with a specific injury or illness. The findings may include significant intermittent or continuous muscle guarding that has been observed and documented by a physician, nonuniform loss of range of motion (dysmetria, differentiator 1, Table 71, p. 109), or nonverifiable radicular complaints. There is *no* objective sign of radiculopathy and *no* loss of structural integrity. See Table 71, differentiator 1 (p. 109).

Structural Inclusions: (1) Less than 25% compression of one vertebral body; (2) posterior element fracture *without* dislocation (not developmental spondylolysis); the fracture is healed, and there is no loss of motion segment integrity.

A spinous or transverse process fracture with displacement without a vertebral body fracture is a category II impairment because it does not disrupt the spinal canal.

Impairment: 5% whole-person impairment.

DRE I vs. DRE II

What if there is a documented history of differentiators that are not present at MMI?

Also consider, the Guides Differentiators in Table 71, page 109 include:

1. Guarding = “Paravertebral muscle guarding or spasm or nonuniform loss of range of motion, dysmetria, is present or has been documented by a physician” per Table 71, p. 109

DRE I vs. DRE II

Table 71, 1. Guarding - APD 080966-s

..”by placing the word "or" between guarding, spasm and nonuniform loss of ROM we read those terms in the disjunctive. We read the Guarding portion of Table 71 to say **guarding can be used as a differentiator if guarding *or* spasm *or* nonuniform loss of ROM is present or has been documented by a physician**, not that all three items of guarding, spasm and nonuniform loss of ROM must be present or documented by a physician before it can be used as a differentiator.”

DRE 1 vs. DRE II

Considering rule 130.1(c)(3); DRE I, DRE II; and APD 080933-s

- This is an area where there is variability in interpretation
- There may be a difference of medical opinion
- You must determine the appropriate DRE category and ***sufficiently explain*** this in your report, based on the compensable injury and case specific facts

DRE I vs. DRE II

Simply listing the differentiators from the Guides is insufficient

- Document which specific DRE differentiator(s) are present at MMI
  and / or
- Describe where the differentiator(s) are found:
  - in the records
  - on your exam

DRE I vs. DRE II

CONCLUSION:

- **The key is to sufficiently explain your rationale for your choice of DRE I or DRE II** so that others reading your report, including an administrative law judge, clearly understand your IR and rationale.
- Failure to sufficiently explain your rationale can lead to receipt of an LOC, or your report being overturned.

DRE II

DON'T FORGET THE OTHER STRUCTURAL DRE II DIFFERENTIATORS

Structural Inclusions:

- Compression fracture < 25%
- Non-displaced posterior element fractures
- Transverse or spinous process fracture with displacement in L and C spine; T spine is unclear

DRE II

DON'T FORGET THE OTHER CLINICAL DRE II DIFFERENTIATOR

Clinical Differentiator:

- Non-verifiable radicular complaints
- No objective signs of radiculopathy
  - ✓There may be a clinical radiculopathy, HOWEVER, it does not meet DRE III thresholds.

Impairment Rating
Spine DRE III: "Radiculopathy"

Radiculopathy is a "title" for the DRE III category

- **Like the DRE II Category, there are DRE III structural and clinical differentiators.**
- **Structural inclusions:**
  1. 25% to 50% compression of one vertebral body;
  2. Posterior element fracture, but *not f*racture of transverse or spinous process, *with* displacement disrupting the spinal canal, healed without loss of structural integrity.

Impairment Rating
Spine DRE III: Radiculopathy

- Radiculopathy may be accepted or a compensable condition, with corresponding clinical findings, BUT must reach threshold of **"significant signs"** to be ***ratable*** as DRE III
- "Significant signs" of radiculopathy
  - Loss of relevant reflex(es)
    - includes decreased and absent relevant reflex(es)
  - 2 cm or greater atrophy (at same location)with circumferential measurements of relevant extremity

Impairment Rating
Spine DRE III: Radiculopathy

- APDs 040924, 091039, 111710 - **Loss of relevant reflex(es) includes *decreased* and *absent* reflexes.**
- APD 030091-s Radiculopathy requires > 2 cm of atrophy and/or loss of relevant reflex(es).
- APD 072220-s clarified that DRE III radiculopathy was for atrophy of **2 cm or more.**

Impairment Rating
Spine DRE III: Radiculopathy

Table 71 (Chapter 3, page 109) lists other differentiators.

4. * Electrodiagnostic evidence

Unequivocal electrodiagnostic evidence exists of acute nerve root compromise, such as multiple positive sharp waves or fibrillation potentials; or H-wave absence or delay greater than 3 mm/sec; or chronic changes such as polyphasic waves in peripheral muscles.

- HOWEVER, APDs 051456 and 980375 state that electrodiagnostic testing is insufficient by itself to assign impairment for radiculopathy in the absence of significant signs of radiculopathy (loss of relevant reflexes or unilateral atrophy).

Impairment Rating Radiculopathy

- A CLINICAL RADICULOPATHY may be evident in the clinical history, BUT at the point of MMI, the injured employee's condition may be a:

DRE III

DRE II

DRE I

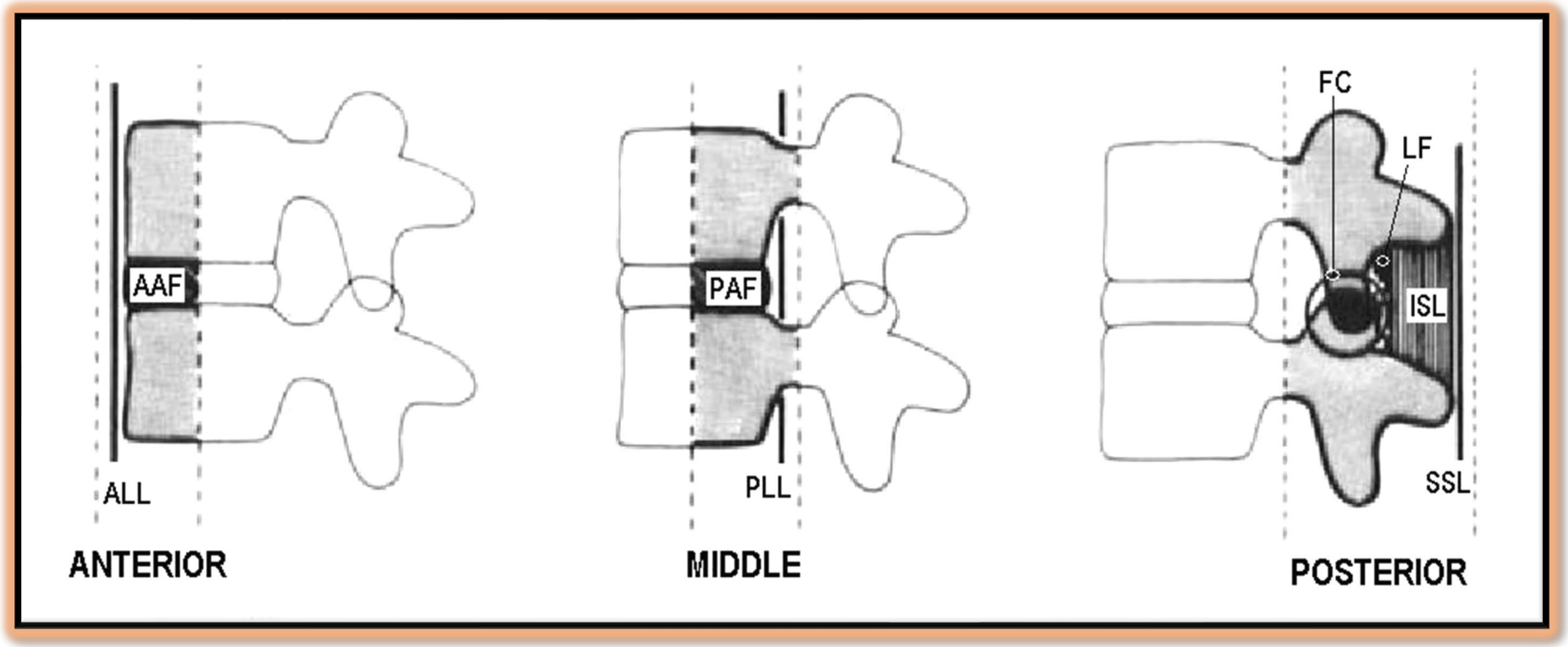
Dependent on the severity of the RADICULOPATHY, individuals may not recover, recover incompletely or recover completely – hence the variability of the DRE category.

Impairment Rating
Spine DRE Categories IV - VIII

SUMMARY

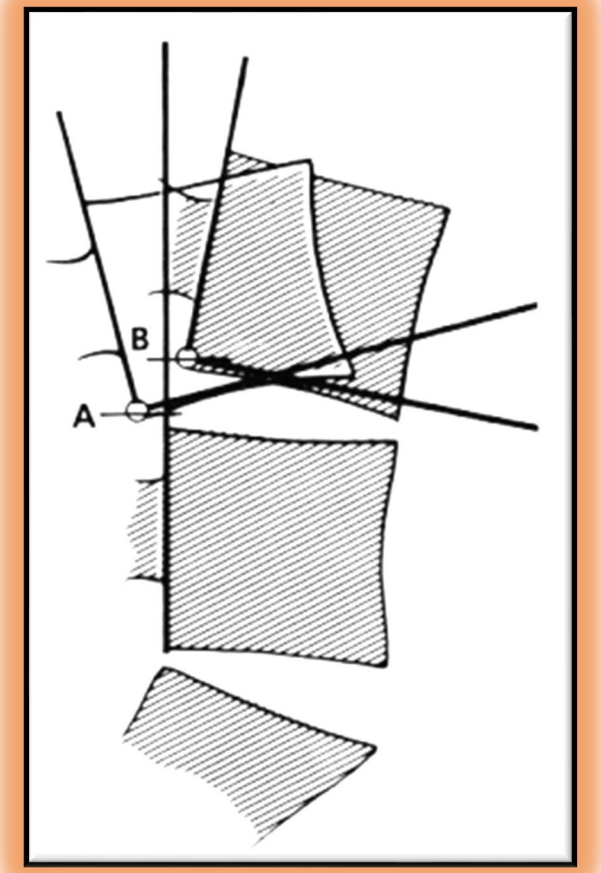
- Rare circumstances
- Covered more thoroughly in the Certification Course
- Refer to AMA Guides, pages 102-111
- Generally, will require HIGH ENERGY trauma mechanism; resulting in enough damage to the supporting structure of the spine and compromises the spinal canal to produce higher levels of neurologic compromise

Spine DRE Categories IV – VIII
Schematic Spinal Anatomy
3 Column Theory (Denis)

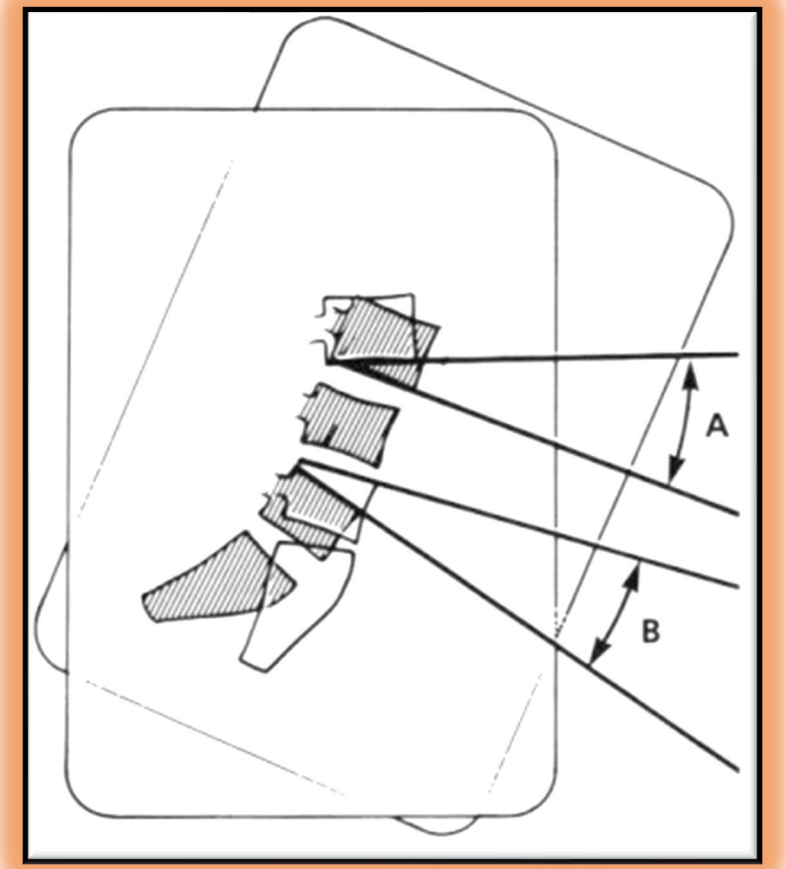


(ALL: Anterior longitudinal ligament, AAF: Anterior annulus fibrosus, PLL: Posterior longitudinal ligament, PAF: Posterior annulus fibrosus, SSL: Supraspinous ligament, ISL: Interspinous ligament, LF: Ligamentum flavum, FC: Facet capsule)

Spine DRE IV
Loss of Motion Segment Integrity - FIGURE 63



TRANSLATION



ANGULAR MOTION

Spine DRE IV
Loss of Motion Segment Integrity or Multilevel Neurologic Compromise

Lumbar

≥ 5mm translation of one vertebra on another (Guides state both ≥ 5mm and > 5mm)

> 15º more angular motion at L5-S1 than L4-L5

>11º more angular motion than adjacent levels

Cervical

≥ 3.5 mm translation of one vertebra on another

> 11º more angular motion than adjacent levels

Lumbar and Cervical

Structural inclusions

- Compression Fracture >50%
- Multilevel spine segment structural compromise (fractures and dislocations)

Impairment Ratings

Cervicothoracic = 25%

Thoracolumbar = 20%

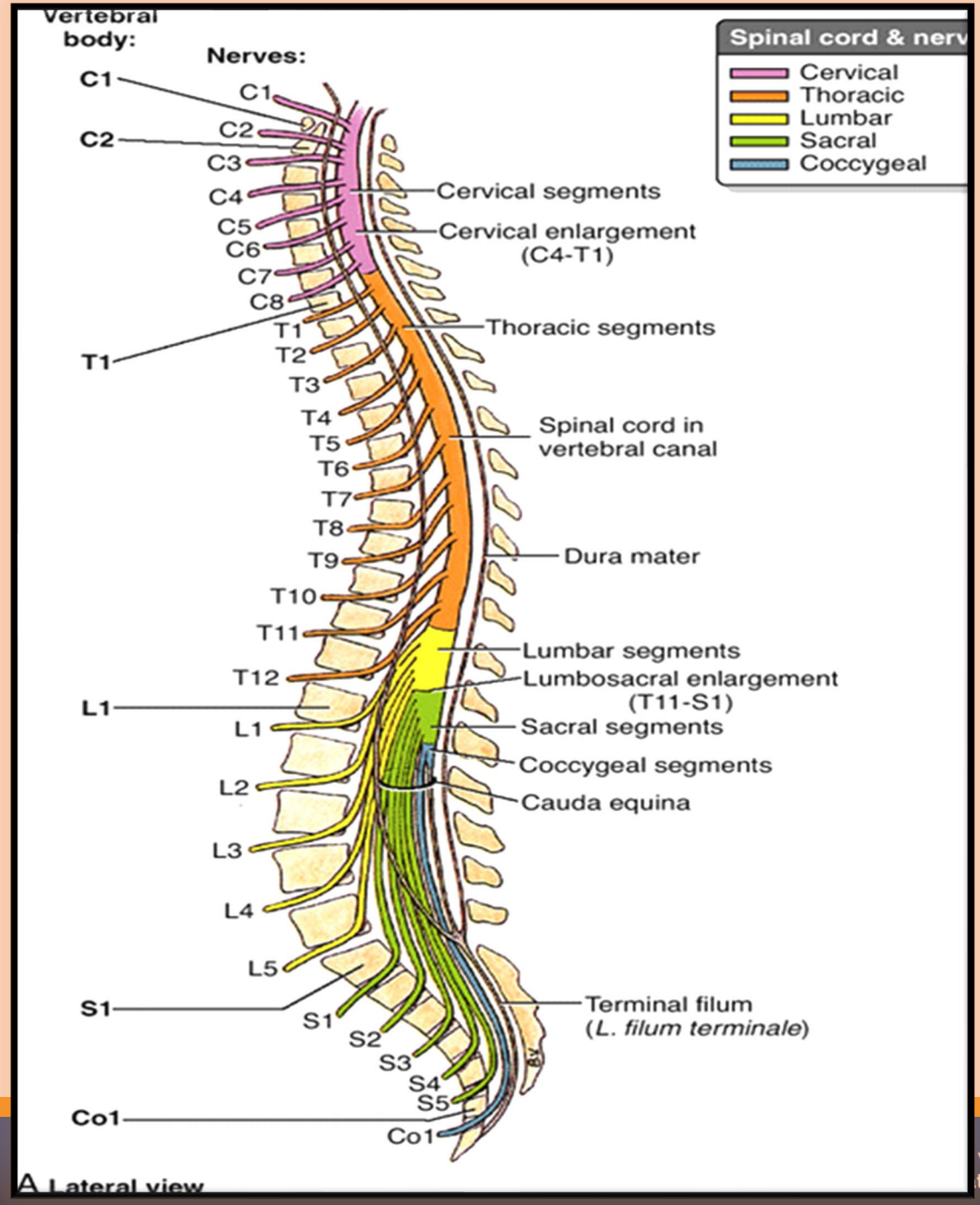
Lumbosacral = 20%

Spine DRE Categories IV – VIII

SPINAL CORD / CAUDA EQUINA / NERVE ROOT SCHEMATIC

Be aware of the spinal segmental levels where the different nerve roots emerge from the cord

- C8 between C7 and T1
- T12 above the conus medullaris (CM) starts to emerge at ~ T9
- L5 root start to emerge from the lumbosacral enlargement of the CM at ~ T11 and exits the spine between L5 and S1
- Sacral roots start to emerge from the lumbosacral enlargement of the CM at ~ T12 and L1



SUMMARY: Spine DRE Categories IV – VIII

Cervicothoracic / Thoracolumbar / Lumbosacral

- Refer to summary Tables:
- 73 – page 110 Cervicothoracic
- 74 – page 111 Thoracolumbar

- These show how the DRE VI to VIII Combine with the DRE II to V
  - **43 % to 84 % for Cervicothoracic**
  - **38 % to 76 % Thoracolumbar**

- *LS spine DRE II – VIII are stand alone IR. DO NOT COMBINE WITH OTHER DRE.*

COMMON SPINE IMPAIRMENT MISTAKES

Not understanding

- Basic science, anatomy and especially neuroanatomy
- Injury mechanisms

Not understanding

- Not all SPINE complaints / clinical findings / imaging findings are due to a specific injury event **[Learn the literature!]**
- Findings on imaging are cumulative over a lifetime even in asymptomatic populations

Nerve Injury, potentially associated with Spine Injury

- Chapter 4 (pages 150-152) address some areas of nerve injury potentially associated with Spine
- Intercostal – Sensory or motor Max 2 % per nerve
- Table 23 – “Spinal Nerves in the Head and Neck Region”
- Table 24 – “Inguinal and Perineal”

Nerve Injury, potentially associated with Spine Injury

- Associated nerve Injury
- Intercostal / Table 23 / Table 24
- Take the MAX value and multiply by Tables in Chapter 4 on page 151 to obtain the final IR:
  - Table 20 – Sensory
  - Table 21 - Motor

Pelvis

Section 3.4 – page 131

- Table is based on healed fractures.
- IR accrues only with displacement of the healed fracture and with or without residuals, dependent on the location.
- Some pelvic fractures are also addressed in lower extremity DREs (Table 64)
- SI joint issues?

Spinal Cord Injury

Section 4.3

Can occur without injury to the structure of the boney spinal column. In this case, – Use Chapter 4 (4.3) – pages 147-149.

- Examples: Epidural Hematoma, Transverse Myelitis, Infections
- Six areas of function (7 tables)
- If multiple areas are involved, *COMBINE* the values.

Check out the article,
"Nomenclature and Classification of Lumbar Disc Pathology" at:

http://hbtinstitute.com/files/SPINE2001_Disk_Nomenclature.pdf

Any Questions on Spine IR?

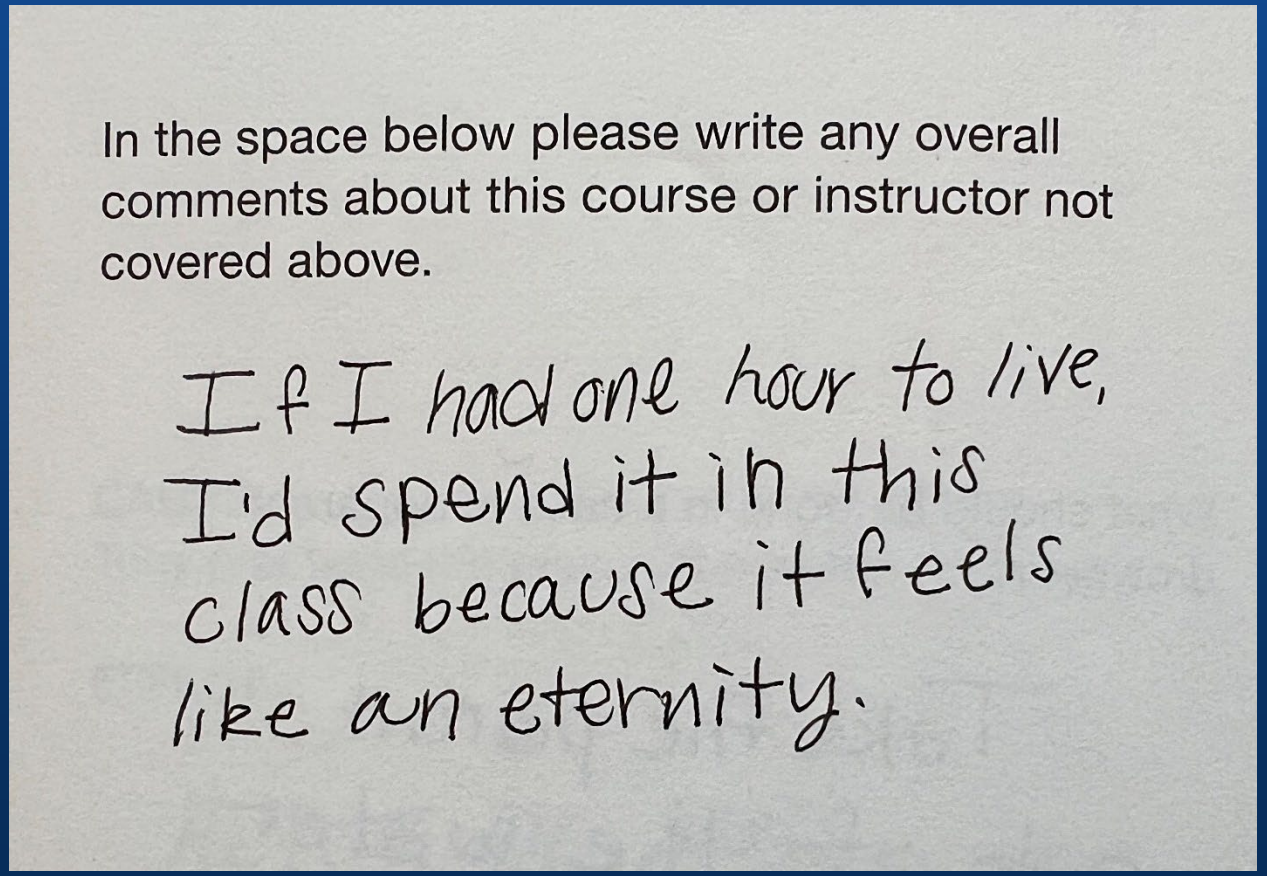
Any Questions on:

Maximal Medical Improvement?

Impairment Rating?

DD 101 Workshop Evaluation

Thank you for your feed back, it helps us provide better training


In the space below please write any overall comments about this course or instructor not covered above.

If I had one hour to live, I'd spend it in this class because it feels like an eternity.

From "F for Effort" by Richard Benson