2011 Annual Meeting
Instructional Course
Lecture Handout

Course Number: 281

Course Title: An Orthopaedist's Introduction to the AMA Guides to Permanent Physical Impairment By Examples Using the 4th, 5th and 6th Edition

Location: San Diego Convention Center, Room 3

Date & Start Time: 16-Feb-2011 08:00 AM

INSTRUCTORS WHO CONTRIBUTED TO THIS HANDOUT:

James B Talmage, MD - 7 (American Medical Association Publications Reed Group, Ltd); Submitted on: 09/09/2010.

J Mark Melhorn, MD - 2 (Auxilium);4 (Abbott; Bristol-Myers Squibb; Eli Lilly; Johnson & Johnson; Merck; Pfizer);5 (Auxilium);7 (American Medical Association Publications); Submitted on: 04/05/2010 and last confirmed as accurate on 04/05/2010.

DISCLOSURE
Each participant in the Annual Meeting is required to disclose if he or she has received something of value from a commercial company or institution, which relates directly or indirectly to the subject of their presentation: The Academy has identified the options to disclose as follows:

The codes after the name are identified as 1= Royalties from a company or supplier; 2= Speakers bureau/paid presentations for a company or supplier; 3A= Paid employee for a company or supplier; 3B= Paid consultant for a company or supplier; 3C= Unpaid consultant for a company or supplier; 4= Stock or stock options in a company or supplier; 5= Research support from a company or supplier as a PI; 6= Other financial or material support from a company or supplier; 7= Royalties, financial or material support from publishers. and n-no conflicts disclosed.

An indication of the participants disclosure appears after his or her name as does the commercial company or institution that provided the support.

The Academy does not view the existence of these disclosed interests or commitments implying bias or decreasing the value of the author’s participation in the meeting.

DISCLAIMER
The material presented at this course has been made available by the AAOS for educational purposes only.

The AAOS disclaims any and all liability for injury, loss or other damages resulting to any individual attending the course and for all claims, which may arise from the use of techniques and strategies demonstrated therein. The material is not intended to represent the only methods, procedures or strategies for the situations discussed. Rather, the course is intended to present an array of approaches, views, statements and opinions which the faculty believe will be helpful to course participants.

Some drugs or medical devices demonstrated in Academy educational programs or materials have not been cleared by the FDA or have been cleared by the FDA for specific uses only. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or device he or she wishes to use in clinical practice.

An Orthopaedist's Introduction to the AMA Guides to Permanent Physical Impairment by Examples Using the 4th, 5th, and 6th Editions

J Mark Melhorn MD
James B Talmage MD

An Orthopaedist's Introduction Upper Limb Examples

J Mark Melhorn MD
Clinical Associate Professor
Section of Orthopaedics
Department of Surgery
University of Kansas
School of Medicine - Wichita

Declare

- The Hand Center
- MAP Managers, owner of CtdMAP
- PHI Developer (Physical Health Index)
- Reviewer multiple journals and books
- A Physician's Guide to Return To Work
- Guides to the Evaluation of Disease and Injury Causation
- ACOEM, MDA, ODG
- CME Program Director AAOS & AADEP
- Guidelines Committee ACOEM
- AMA Guides to Impairment
- Journal reviewer, etc

Background

4th and 5th Editions AMA Guides Similar

6th Edition – Shift to Diagnosis-Based Impairment (DBI) and ICF Model

- Class 0 : No objective problem
- Class 1 : Mild problem
- Class 2 : Moderate problem
- Class 3 : Severe problem
- Class 4 : Very severe problem

AMA Guides, 1st Edition **(1971)** Chapter 1: Definitions

Impairment:

"This is a purely medical condition. Permanent impairment is any anatomic or functional abnormality or loss after maximal medical rehabilitation has been achieved, which abnormality or loss the physician considers stable or nonprogressive at the time evaluation is made." page iii

AMA Guides, 1st Edition **(1971)** Chapter 1: Definitions

Disability:

"This is not a purely medical condition. A patient is "permanently disabled" or "under a permanent disability" when his actual or presumed ability to engage in gainful activity is reduced or absent because of "impairment" which, in turn, may or may not be combined with other factors. A permanent condition is found to exist if no fundamental or marked change can be expected in the future." page iii

AMA Guides, 4th & 5th Edition Chapter 1: Definitions

- **Impairment:** Loss, loss of use, or derangement of any body part, organ system, or organ function. (unchanged)
- **Disability:** Alteration of an individual's capacity to meet personal, social, or occupational demands because of an impairment. (unchanged)

KEY POINT

- Physicians rate impairment
  - Medical determination
  - Medical training required (Anatomy, Physiology)
- Judges rate disability
  - Judge "factors in" NON-medical factors
  - In Workers' Compensation, the philosophical basis for the Lump Sum cash settlement is the loss of earning ability, and NOT "pain and suffering."
- Doctor: Do NOT think about the ability to do his/her job, availability of similar jobs in the local economy, etc., as that is the judge's task, NOT your task.

Impairment DOES NOT equal Disability

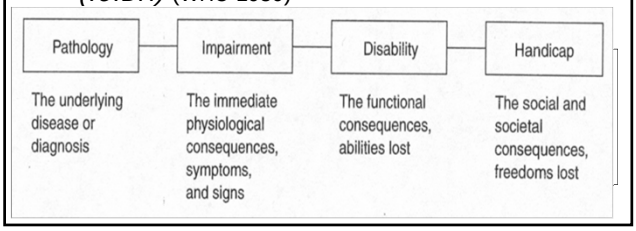
- Example: both a lawyer and a pianist sustain an amputation of the non-dominant little finger.
  - Both have the same impairment
    - 100% of the digit, 10% of the hand, 9% of the upper extremity, 5% whole person
  - The lawyer has no disability
  - The pianist is unable to perform his occupation
    - Totally disabled for his occupation
    - Fully capable of many jobs
- Physician's role: Determine IMPAIRMENT

AMA Guides Philosophy

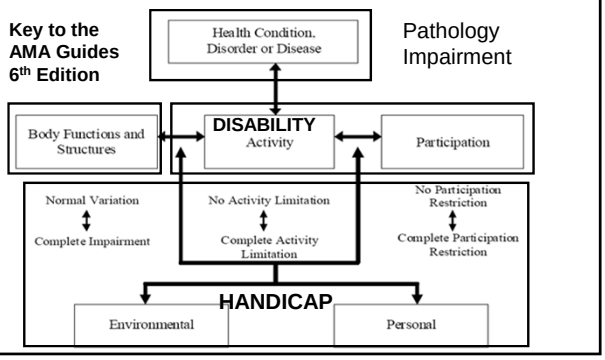
- Ratings reflect the severity and limitations of the organ/body system impairment and resulting functional limitations
- Ratings in whole person, or converted to whole person
- 0% whole person rating
  - No significant organ or body system functional consequences
  - Does not limit the performance of common activities of daily living
- 90% - 100% whole person rating
  - Very severe organ or body system impairment
  - Requires the individual to be fully dependent on others for self-care, approaching death

AMA Guides 1st – 5th Editions Model of Disablement

- Based upon *International Classification of Impairments, Disabilities and Handicaps (ICIDH)* (WHO 1980)



ICF Model of Impairment



Chapter 1: AMA Guides, 5th Edition

MUST be "at MMI" to be rated for impairment.

Definitions: Maximal Medical Improvement
"Condition is well stabilized and unlikely to change significantly in the next year, with or without treatment."

4th Edition said "unlikely to change by > 3 % in the next year."
"Crystal ball" no longer required to predict the future.

Example: Fracture that has NOT yet healed, PROBABLY NOT at MMI, YET

Chapter 1: AMA Guides, 5th Edition

Definitions: Maximal Medical Improvement

- Ongoing palliative treatment does NOT prevent a determination of "at MMI".
  - Pain management may continue despite "at MMI".
  - Imminent plan for reconstructive surgery should mean "NOT YET at MMI".
  - Gradual worsening with time does NOT preclude "at MMI"
    - Intra-articular fracture with post-traumatic arthritis will predictably get worse with time (years).

AMA Guides, 6th Edition

- Definition: Maximal Medical Improvement
  - "*Maximum Medical Improvement (MMI)* refers to a status where the person is as good as he/she is going to get from the medical and surgical treatment available to him/her. It can also be conceptualized as a date from which further recovery or deterioration is not anticipated, although over time (beyond twelve months) there may be some expected change." Chapter 2, section 6e

AMA Guides, 6th Edition

- Definition: Maximal Medical Improvement
  - "MMI does not preclude the deterioration of a condition that is expected to occur with the passage of time or as a result of the normal aging process, nor does it preclude allowance for ongoing follow-up for optimal maintenance of the medical condition in question. ." Chapter 2, section 6e

ICF Model Advantages Section 1.3b

- "The ICF model appears to be the best model for the *Guides*. It acknowledges the complex and dynamic interactions between an individual with a given health condition, the environment, and personal factors. The relationships between impairment, activity limitations, and participation are not assumed to be linear or unidirectional."

Impairment Calculation

1. Diagnosis = anatomic region = digit/hand, wrist, elbow, shoulder
2. Diagnosis-Based Impairment Regional Grid (DBI) – determine by Dx
3. Class - determine by Dx
4. Grade modifier – determine by functional history, physical examination, clinical studies – not in Dx

DBI = Dx-Based Impairment

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		**A B C D E**	**A B C D E**	**A B C D E**	**A B C D E**
Soft Tissue					
Muscle / Tendon					
Ligament/ Bone/Joint					

Impairment Classes

Diagnosis-Based Impairment (DBI)

- Class 0 : No objective problem
- Class 1 : Mild problem
- Class 2 : Moderate problem
- Class 3 : Severe problem
- Class 4 : Very severe problem

Impairment Classes

Table 15-1 pg 385		Impairment Range	
Class	Problem	Upper Extremity	Whole Person
0	no objective findings	0%	0%
1	Mild	1% - 13%	1% - 8%
2	Moderate	14% - 15%	8% - 15%
3	Severe	26% - 49%	16% - 29%
4	Very severe	50% - 100%	30% - 60%

Grade Modifiers

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		**A B C D E**	**A B C D E**	**A B C D E**	**A B C D E**
Grade modifiers		# # # # # ⬆	# # # # # ⬆	# # # # # ⬆	# # # # # ⬆
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

A Time to Reflect

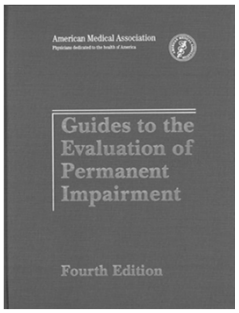
- Remember – each edition made “corrections” for impairments that seemed too high or too low – this has been done for each new edition
- If you use the 6th - Don’t forget about errata or get the online version or the 2nd printing – April 2009 with 634 pages

Impairment Calculation

OUCH

4th Impairment Calculation

- Upper Limb
  Chapter 15
  6th pages 383-492
- Chapter 1 and 2 rules



4th Impairment Calculation

1. Upper Limb – Chapter 15 6th pages 383-492
2. Chapter 1 and 2 – rules
3. At MMI (Maximum Medical Improvement)
4. Do you have all the information you need?
5. How do you approach the calculation?

Colles' Fracture

- A 40 year old female falls on the ice with a fracture of her right distal radius.
- She is seen in the emergency room and a closed reduction is performed.
- On follow-up her fracture reduction has been lost and she undergoes an ORIF with a volar plate
- She is now 9 months post surgery.

Colles' Fracture

Subjective (Functional)

- She completed her 12 therapy visits and her range of motion has not changed over the last 3 months.
- She still complains of wrist stiffness and pain at the ends of motion.
- She has returned to her work as a lawyer.

Colles' Fracture

- She marks her white drawing as 4 out of 10.
- Her QuickDASH is 45
- Ulnar side wrist pain with ulnar deviation
- Tender over DRUJ – no instability present

Colles' Fracture

PE

- Well healed palmer forearm incision
- Normal color, warmth, hair pattern
- Slight dorsal wrist prominence

Xrays

- Stable fracture with appropriate bone union

Colles' Fracture

- Grip right 11, 11, 11 kgs
  Grip left 21, 22, 23 kgs
- rapid right 18,18,19,17,12
  rapid left 21,22,22,23,24
- Five position right 18,16,15,16,18
- Five position left 21,22,24,22,23

Colles' Fracture

- ROM
  Flexion 33
  Extension 33
  Radial 12
  Ulnar 17
  Supination 58
  Pronation 48

4th Impairment Calculation

- Read the fine print
- 4th page 35, 3lh Wrist
- Wrist function is 60% of upper extremity function
- Two units of function (F/E & R/U)
- Measure maximum (active) range of motion
- Round to the nearest 10 degrees

4th Impairment Calculation

- Impairments of supination and pronation are ascribed to the elbow
- Relative value of each wrist function is included in the charts – impairments of F/E and R/U are added

Colles' Fracture

- ROM
  Flexion 33 (round to) 30
  Extension 33 (round to) 30
  Radial 12 (round to 10)
  Ulnar 17 (round to 20)
  Supination 58 (round to) 60
  Pronation 48 (round to) 50

Impairment Calculation

1. At MMI (Maximum Medical Improvement)
2. Do you have all the information you need?
3. How do you approach the calculation?

UE - Impairment Calculation

1. Amputation
2. ROM (range of motion) default – inclusive of other considerations
3. Sensory loss (nerve)
4. Strength loss (motor)
5. Skin and soft tissue

UE - Impairment Calculation

1. Amputation - no
2. ROM (range of motion) default – inclusive of other considerations - yes
3. Sensory loss (nerve) - no
4. Strength loss (motor) - included in ROM
5. Skin and soft tissue - no

4th Impairment Calculation

1. If new to impairments use the 4th Figure 1

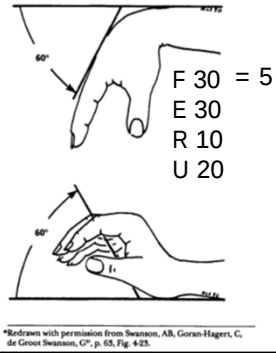
4th Impairment Calculation

		Abnormal motion				Other disorders	Regional impairment %	Amputati
		Record motion, ankylosis and impairment %				List type & impairment %	• Combine [1] + [2]	Mark level impairmen
		Flexion	Extension	Ankylosis	IMP%			
Wrist	Angle°	30	30					
	IMP%							
		RD	UD	Ankylosis	IMP%			
	Angle°	10	20					
	IMP%							
	Add IMP% F/E + RD/UD =				[1]	IMP% = [2]		
		Flexion	Extension	Ankylosis	IMP%			
	Angle°							

4th Impairment Calculation

		Flexion	Extension	Ankylosis	IMP%		
Elbow	Angle°						
	IMP%						
		Pro	Sup	Ankylosis	IMP%		
	Angle°	60	40				
	IMP%						
	Add IMP% F/E + PRO/SUP =				[1]	IMP% = [2]	

4th



F 30 = 5
E 30
R 10
U 20

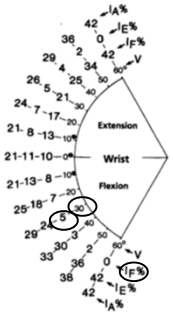


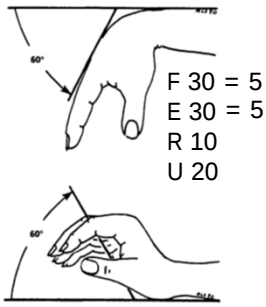
Figure 24. Wrist Flexion (above) and Extension (below).*

Figure 26. Upper Extremity Impairments Due to Lack of Flexion and Extension of Wrist Joint. Relative value of this functional unit to upper extremity impairment is 42%.†

Redrawn with permission from Swanson, AB, Goran-Hagert, C, de Groot Swanson, G, p. 65, Fig. 4-23.

4th

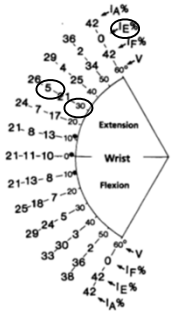
Figure 24. Wrist Flexion (above) and Extension (below).*



F 30 = 5
E 30 = 5
R 10
U 20

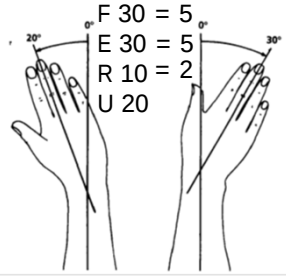
Redrawn with permission from Swanson, AB, Goran-Hagert, C, de Groot Swanson, G, p. 63, Fig. 4-23.

Figure 26. Upper Extremity Impairments Due to Lack of Flexion and Extension of Wrist Joint. Relative value of this functional unit to upper extremity impairment is 42%.†



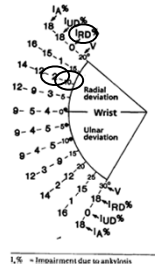
4th

Figure 27. Radial Deviation (left) and Ulnar Deviation (right) of Right Wrist.*



F 30 = 5
E 30 = 5
R 10 = 2
U 20

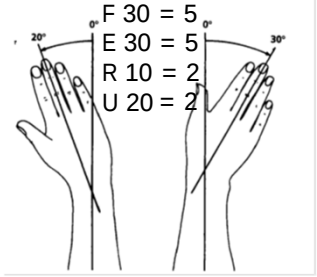
Figure 29. Upper Extremity Impairments Due to Abnormal Radial and Ulnar Deviations of Wrist Joint. Relative value of this functional unit to upper extremity impairment is 18%.†



I, % = Impairment due to ankylosis

4th

Figure 27. Radial Deviation (left) and Ulnar Deviation (right) of Right Wrist.*



F 30 = 5
E 30 = 5
R 10 = 2
U 20 = 2

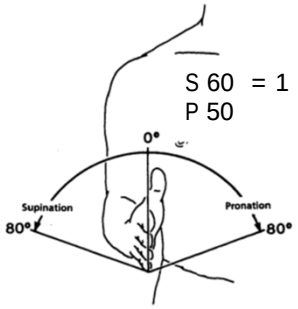
Figure 29. Upper Extremity Impairments Due to Abnormal Radial and Ulnar Deviations of Wrist Joint. Relative value of this functional unit to upper extremity impairment is 18%.†

If used 17
2 or 3?
Round to 20

I, % = Impairment due to ankylosis

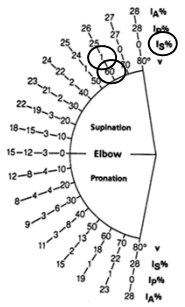
4th

Figure 33. Pronation and Supination of Forearm.



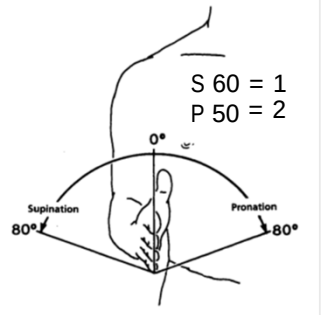
S 60 = 1
P 50

Figure 35. Upper Extremity Impairments Due to Lack of Pronation and Supination. Relative value of this functional unit to upper extremity impairment is 28%.†



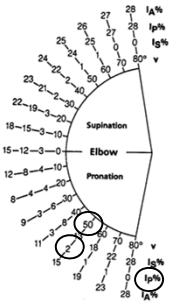
4th

Figure 33. Pronation and Supination of Forearm.



S 60 = 1
P 50 = 2

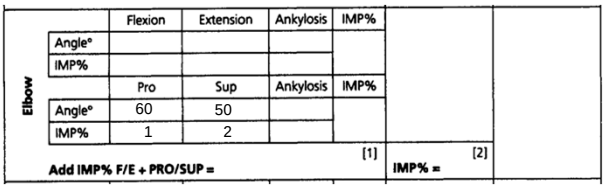
Figure 35. Upper Extremity Impairments Due to Lack of Pronation and Supination. Relative value of this functional unit to upper extremity impairment is 28%.†



4th Impairment Calculation

		Abnormal motion				Other disorders	Regional impairment %	Amputati
		Record motion, ankylosis and impairment %				List type & impairment %	• Combine [1] + [2]	Mark level impairmen
Wrist		Flexion	Extension	Ankylosis	IMP%			
	Angle°	30	30					
	IMP%	5	5					
		RD	UD	Ankylosis	IMP%			
	Angle°	10	20					
	IMP%	2	2					
	Add IMP% F/E + RD/UD =				[1]	IMP% = [2]		
		Flexion	Extension	Ankylosis	IMP%			
	Angle°							

4th Impairment Calculation



Elbow		Flexion	Extension	Ankylosis	IMP%		
	Angle°						
	IMP%						
		Pro	Sup	Ankylosis	IMP%		
	Angle°	60	50				
	IMP%	1	2				
Add IMP% F/E + PRO/SUP =					[1]	IMP% =	[2]

4th Impairment Calculation

- Flexion 30 = 5%
- Extension 30 = 5%
- Radial 10 = 2%
- Ulnar 20 = 2%

- Supination 60 = 1%
- Pronation 50 = 2%

4th Impairment Calculation

1. Wrist -- Add Impairment by
   UE Imp% = (F+E) + (R+U)
   = (5+5) + (2+2) = 14%

2. Wrist -- Add Impairment by
   UE Imp% = (F+E) + (R+U) + (S+P)
   = (5+5) + (2+2) +(1+2) = 17%

4th Impairment Calculation

1. Amputation - no
2. ROM (range of motion) default – inclusive of other considerations - yes
3. Sensory loss (nerve) - no
4. Strength loss (motor) - included in ROM
5. Skin and soft tissue - no

4th Impairment Calculation

- Strength loss (motor) - included in ROM
- 4th page 64
- Strength are functional tests influenced by subjective factors that are difficult to control
- Guides does not assign a large role to loss of grip

4th Impairment Calculation

- In rare case, if loss of strength represents an impairing factor that has not been considered adequately, the loss of strength may be rated separately
- Strength loss is combined with other upper extremity impairments

4th Impairment Calculation

- Grip right 11, 11, 11 kgs
  Grip left 21, 22, 23 kgs
- rapid right 18,18,19,17,12
  rapid left 21,22,22,23,24
- Five position right 18,16,15,16,18
- Five position left 21,22,24,22,23
- - so what is next?

4th Impairment Calculation

- 4th page 65 – if there is suspicion or evidence that the subject is exerting less than maximal effort, the grip strength measurements are invalid for estimating impairment
- But if it hurts you grip less
- Wide variations, in five, rapid exchange

4th Impairment Calculation

- Grip right 11, 11, 11 kgs
  Grip left 21, 22, 23 kgs
- Ok so lets use the above
- Strength index is calculated by
- (Normal – Abnormal) / (Normal)
- Ave 11,11,11, = 11 and 21,22,23 = 22
- (22-11)/22 = 50% strength index

4th Impairment Calculation

Example only -- do not do this

Table 34. Upper Extremity Impairment for Loss of Strength.

% Strength Loss Index	% Upper extremity impairment
10 - 30	10
31 - 60	20
61 - 100	30

Therefore, 10% would be combined with previous

4th Impairment Calculation

Example only – to learn combining

1. Wrist -- Add Impairment by
   UE Imp% = (F+E) + (R+U)
   = (5+5) + (2+2) = 14%

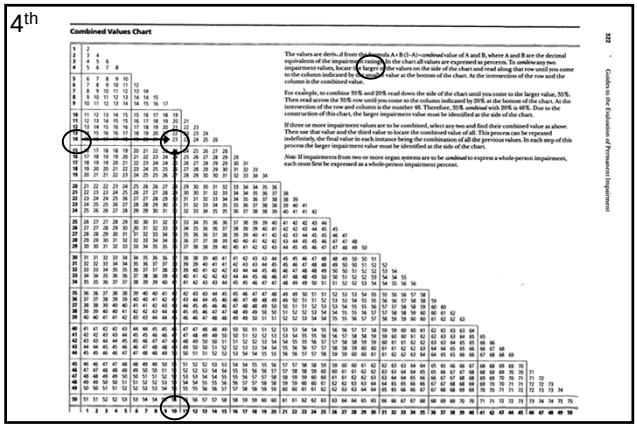
   14% combine with 10% = 23%

4th Impairment Calculation

How do you combine?

1. Combined values tables 4th page 322
2. A=B(1-A) = combined value
3. Locate larger of two numbers in left column and smaller number on bottom row
4. If three or more “select any two” combine and repeat for next two

4th


Combined Values Chart

322 · Guides to the Evaluation of Permanent Impairment

The values are derived from the formula A + B(1–A)=*combined* value of A and B, where A and B are the decimal equivalents of the impairment percentages. On the chart all values are expressed as percents. To *combine* any two impairment values, locate the larger of the values on the side of the chart and read along that row until you come to the column indicated by the smaller value at the bottom of the chart. At the intersection of the row and the column is the combined value.

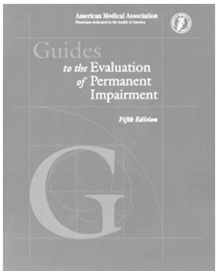
For example, to combine 35% and 20% read down the side of the chart until you come to the larger value, 35%. Then read across the 35% row until you come to the column indicated by 20% at the bottom of the chart. At the intersection of the row and column is the number 48. Therefore, 35% *combined* with 20% is 48%. Due to the construction of this chart, the larger impairment value must be identified at the side of the chart.

If three or more impairment values are to be combined, select any two and find their combined value as above. Then use that value and the third value to locate the combined value of all. This process can be repeated indefinitely, the final value in each instance being the combination of all the previous values. In each step of this process the larger impairment value must be identified at the side of the chart.

Note: If impairments from two or more organ systems are to be *combined* to express a whole-person impairment, each must first be expressed as a whole-person impairment percent.

5th Impairment Calculation

- Upper Limb
  Chapter 16
  5th pages 433-522
- Chapter 1 and 2 rules



5th Impairment Calculation

1. 4th Edition Upper Extremity is Chapter 3
2. 5th Edition Upper Extremity is Chapter 16
3. All the tables and figures are the same but the numbers change
4. So – if you can do the 4th, you just completed the 5th

5th Impairment Calculation

1. Amputation - no
2. ROM (range of motion) default – inclusive of other considerations - yes
3. Sensory loss (nerve) - no
4. Strength loss (motor) - included in ROM
5. Skin and soft tissue - no

5th Impairment Calculation

- Strength loss (motor) - included in ROM
- 5th page 508
- Could be combined only if based on unrelated etiologic or pathomechanical causes. Otherwise the impairment ratings based on objective anatomic findings take precedence.

5th Impairment Calculation

- Decreased strength cannot be rated in the presence of decreased motion, painful conditions, deformities, or absence of parts that prevent effective application of maximal force in the region being evaluated.

5th Impairment Calculation

- But . . . (like the 4th)
- In rare case, if loss of strength represents an impairing factor that has not been considered adequately, the loss of strength may be rated separately
- Strength loss is combined with other upper extremity impairments

5th Impairment Calculation

Removed in 5th

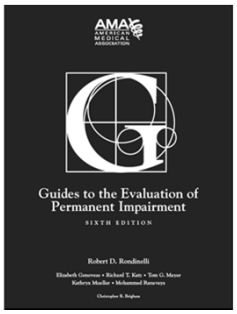
- 5th page 509 – if there is ~~suspicion or~~ evidence that the subject is exerting less than maximal effort, the grip strength measurements are invalid for estimating impairment
- But if it hurts you grip less
- Wide variations, in five, rapid exchange

5th Impairment Calculation

- 5th page 509
- Individuals whose performance is inhibited by pain or fear of pain may not be good candidates for manual muscle testing
- Results should be reproducible on different occasions or by two trained observers

6th Impairment Calculation

- Upper Limb
  Chapter 15
  6th pages 383-492
- Chapter 1 and 2 rules



6th Impairment Calculation

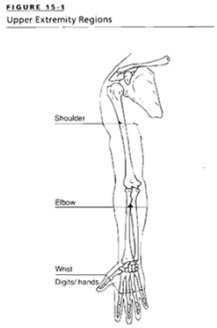
- Upper limb preferred over upper extremity
- 4 regions

1. Digits/Hand
2. Wrist
3. Elbow
4. Shoulder

6th Impairment Calculation

- Upper limb preferred over upper extremity
- 4 regions

1. Digits/Hand
2. Wrist
3. Elbow
4. Shoulder



6th Impairment Calculation

1. 6th page 14 1.8d – General principles and rules for calculating impairment
2. Most impairments are based on the Diagnosis-based Impairments (DBI) where Impairment Class is determined by the diagnosis and/or specific criteria; this is then adjusted by "non-key" factors (grade modifiers) that may include Functional History, Physical Examination, and Clinical Studies

6th Impairment Calculation

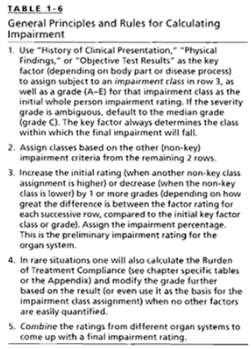


TABLE 1-6

General Principles and Rules for Calculating Impairment

1. Use "History of Clinical Presentation," "Physical Findings," or "Objective Test Results" as the key factor (depending on body part or disease process) to assign subject to an *impairment class* in row 3, as well as a grade (A–E) for that impairment class as the initial whole person impairment rating. If the severity grade is ambiguous, default to the median grade (grade C). The key factor always determines the class within which the final impairment will fall.
2. Assign classes based on the other (non-key) impairment criteria from the remaining 2 rows.
3. Increase the initial rating (when another non-key class assignment is higher) or decrease (when the non-key class is lower) by 1 or more grades (depending on how great the difference is between the factor rating for each successive row, compared to the initial key factor class or grade). Assign the impairment percentage. This is the preliminary impairment rating for the organ system.
4. In rare situations one will also calculate the Burden of Treatment Compliance (see chapter specific tables or the Appendix) and modify the grade further based on the result (or even use it as the basis for the impairment class assignment) when no other factors are easily quantified.
5. *Combine* the ratings from different organ systems to come up with a final impairment rating.

6th Impairment Calculation

1. Functional History
2. Physical Examination
3. Clinical Studies

6th Impairment Calculation

1. At Impairment is performed at MMI (Maximum Medical Improvement) 6th page 15 section 1.8e
2. Do you have all the information you need?
3. How do you approach the calculation?

6th Impairment Calculation

1. Amputation
2. ROM (range of motion) default – inclusive of other considerations
3. Sensory loss (nerve)
4. Strength loss (motor)
5. Skin and soft tissue
6. Functional history & clinical studies

6th Impairment Classes

Table 15-1 pg 385		Impairment Range	
Class	Problem	Upper Extremity	Whole Person
0	no objective findings	0%	0%
1	Mild	1% - 13%	1% - 8%
2	Moderate	14% - 15%	8% - 15%
3	Severe	26% - 49%	16% - 29%
4	Very severe	50% - 100%	30% - 60%

6th Impairment Calculation

1. Diagnosis = anatomic region = digit/hand, wrist, elbow, shoulder
2. Diagnosis-Based Impairment Regional Grid (DBI) – determine by Dx
3. Class - determine by Dx
4. Grade modifier – determine by functional history, physical examination, clinical studies – not in Dx

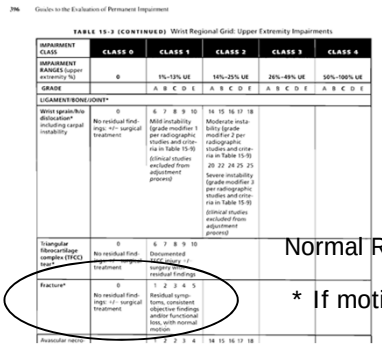
6th Grade Modifiers

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		A B C D E	A B C D E	A B C D E	A B C D E
Grade modifiers		# # # # # ⬆	# # # # # ⬆	# # # # # ⬆	# # # # # ⬆
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Impairment Calculation

1. Diagnosis = anatomic region = wrist = Colles' Fracture
2. Diagnosis-Based Impairment Regional Grid (DBI) – determine by Dx = 6th Table 15-3 Wrist – find fracture

6th Impairment Calculation



396 Guides to the Evaluation of Permanent Impairment

TABLE 15-3 (CONTINUED) Wrist Regional Grid: Upper Extremity Impairments

IMPAIRMENT CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RANGES (upper extremity %)	0	1%–13% UE	14%–25% UE	26%–49% UE	50%–100% UE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
LIGAMENT/BONE/JOINT*					
Wrist sprain/fracture/dislocation* including carpal instability	0 No residual findings: +/– surgical treatment	6 7 8 9 10 Mild instability (grade modifier 1 per radiographic studies and criteria in Table 15-9) (clinical studies excluded from adjustment process)	14 15 16 17 18 Moderate instability (grade modifier 2 per radiographic studies and criteria in Table 15-9) 20 22 24 25 25 Severe instability (grade modifier 3 per radiographic studies and criteria in Table 15-9) (clinical studies excluded from adjustment process)		
Triangular fibrocartilage complex (TFCC) tear*	0 No residual findings: +/– surgical treatment	6 7 8 9 10 Documented TFCC injury: +/– surgery with residual findings			
Fracture*	0 No residual findings: +/– surgical treatment	1 2 3 4 5 Residual symptoms, consistent objective findings and/or functional loss, with normal motion			
Avascular necrosis		1 2 3 4	14 15 16 17 18		

Normal ROM

* If motion loss

6th Impairment Calculation

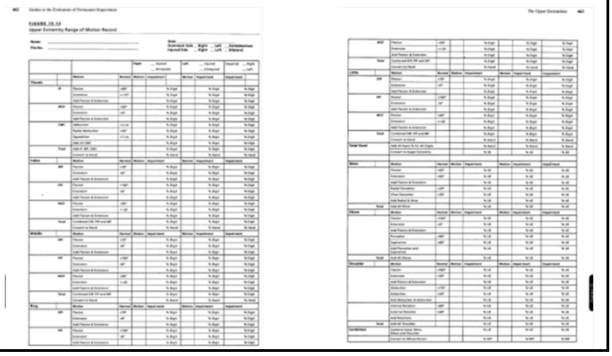
* If motion loss present, this impairment may alternatively be assessed using Section 15.7, Range of Motion Impairment. A range of motion impairment stands alone and is not combined with diagnosis impairments (DBI). 6th page 397

6th Impairment Calculation

3. Class - determine by Dx
4. Grade modifier – determine by functional history, physical examination, clinical studies – not in Dx

Above do not apply since ROM loss for this diagnosis

6th Impairment Calculation



6th Impairment Calculation

6th page 459 Section 15.7 Range of Motion Impairment

- Historical precedent
- Surface goniometry
- DBI is method of choice for impairment
- ROM is stand-alone rating
- Final impairment may be adjusted for Functional history in certain circumstances

6th Impairment Calculation

6th page 459 Section 15.7 Range of Motion Impairment

"Adjustments" examples

1. Burns
2. Scarring
3. Tendon injuries
4. Crush injuries or compartment syndrome

6th Impairment Calculation

6th page 459 Section 15.7 Range of Motion Impairment

"Adjustments" examples

5. Amputation if ROM loss for remaining portion of limb
6. Rare case – if DBI but AROM results in greater impairment, use ROM not DBI

6th Impairment Calculation

6th page 461

- Active ROM is used for impairment
- Passive ROM should be measured to compare
- Discrepancies should be addressed in report

6th Impairment Calculation

6th page 461

- Disallow the rating if no patho-anatomic or physiological correlation to Dx or if there is suboptimal effort or symptom magnification
- Sound clinical knowledge and measurement techniques are necessary

6th Impairment Calculation

6th page 461

- Joint ROM are rounded to the nearest whole number ending in 0
- Thus joint motion is not as 32 or 48 but as 30 and 50 respectively
- Neutral zero reference system (same)

6th Impairment Calculation

6th page 464

- Warm up – maximum ROM x 3 before measure
- Measure ROM 3 times
- All measurements should fall within 10 degrees of the mean of these 3 measures
- Maximum observed measure is used

6th Impairment Calculation

6th page 464

- Compare observed findings with other findings
- Determine reliability
- Recognize that patients may under-demonstrate their capabilities

6th Impairment Calculation

6th page 465 – Grade modifiers

Grade Modifier	Severity	Range of Motion
0	Normal	
1	Mild	60%–90% of normal motion (average: 75% of normal motion)
2	Moderate	30%–60% of normal motion (average: 45% of normal motion)
3	Severe	<30% of normal motion (average: 15% of normal motion)
4	Very severe	Joint ankylosis

6th Impairment Calculation

6th page 469 15.7e Wrist

- Wrist is 60% upper limb (same)
- 2 functional units (F/E & R/U) (same)

6th Impairment Calculation

New label same ROM

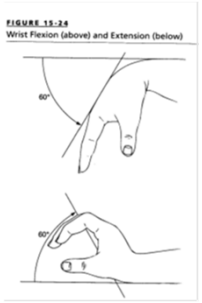


FIGURE 15-24
Wrist Flexion (above) and Extension (below)

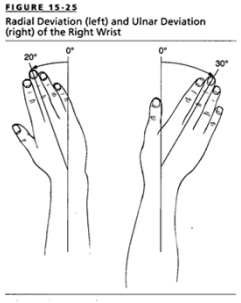


FIGURE 15-25
Radial Deviation (left) and Ulnar Deviation (right) of the Right Wrist

TABLE 15-32
Wrist Range of Motion 6th

Grade Modifier		0	1	2	3	4
Severity		None (Normal)	Mild	Moderate	Severe	Ankylosis
Motion (percentage compared to normal)		≥90%	61% to 90%	31% to 60%	≤30%	
Joint						
Wrist	70% Wrist					
Flexion	Motion* = % Upper Extremity Impairment (% UEI)	≥60° = 0%	30° to 50° = 3% UEI	20° = 7% UEI	≤10° = 9% UEI	−10° to + 10° = 21% UEI +20° to +40° or −20° to −40° = 25% UEI ≥+50° or ≤−50° = 40% UEI
Extension		≥60° = 0%	30° to 50° = 3% UEI	20° = 7% UEI	≤10° = 9% UEI	
Wrist	30% Wrist					
Radial Deviation		≥20° = 0%	10° = 2% UEI	0° = 4% UEI	≥10° ulnar deviation = 12% UEI	0° to 10° ulnar deviation = 9% UEI 10° radial deviation or 20° ulnar deviation = 14% UEI ≥20° radial deviation or ≥30° ulnar deviation = 18% UEI
Ulnar Deviation		≥30° = 0%	20° = 2% UEI	10° to 0° = 4% UEI	≥10° radial deviation = 12% UEI	

6th Impairment Calculation

- Flexion 33 (round to) 30
- Extension 33 (round to) 30
- Radial 12 (round to) 10
- Ulnar 17 (round to) 20

- Supination 58 (round to) 60
- Pronation 48 (round to 50)

TABLE 15-32
Wrist Range of Motion 6th

Grade Modifier		0	1	2	3	4
Severity		None (Normal)	Mild	Moderate	Severe	Ankylosis
Motion (percentage compared to normal)		≥90%	61% to 90%	31% to 60%	≤30%	
Joint						
Wrist	70% Wrist					
Flexion	Motion* = % Upper Extremity Impairment (% UEI)	≥60° = 0%	30° to 50° = 3% UEI	20° = 7% UEI	≤10° = 9% UEI	−10° to + 10° = 21% UEI +20° to +40° or −20° to −40° = 25% UEI ≥+50° or ≤−50° = 40% UEI
Extension		≥60° = 0%	30° to 50° = 3% UEI	20° = 7% UEI	≤10° = 9% UEI	
Wrist	30% Wrist					
Radial Deviation		≥20° = 0%	10° = 2% UEI	0° = 4% UEI	≥10° ulnar deviation = 12% UEI	0° to 10° ulnar deviation = 9% UEI 10° radial deviation or 20° ulnar deviation = 14% UEI ≥20° radial deviation or ≥30° ulnar deviation = 18% UEI
Ulnar Deviation		≥30° = 0%	20° = 2% UEI	10° to 0° = 4% UEI	≥10° radial deviation = 12% UEI	

30 30 10 20

6th Impairment Calculation

New label same ROM

FIGURE 15-27
Pronation and Supination of Forearm

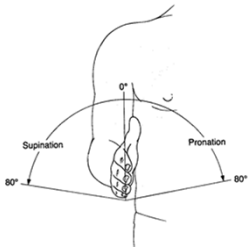


TABLE 15-33
Elbow/Forearm Range of Motion 6th

Grade Modifier		0	1	2	3	4
Severity		None (Normal)	Mild	Moderate	Severe	Ankylosis
Motion (percentage compared to normal)		≥90%	61% to 90%	31% to 60%	≤30%	
Joint						
Elbow	60% Elbow					
Flexion	Motion* = % Upper Extremity Impairment (% UEI)	≥140° = 0%	110° to 130° = 3% UEI 70° to 100° = 8% UEI	60° to 20° = 27% UEI	≤10° = 40% UEI	80° = 21% UEI 50° to 70° or 90° to 100° = 25% UEI ≤40° or ≥110° 38% UEI
Extension		0° = 0%	10° to 40° lag = 2% UEI 50° to 60 lag = 5% UEI	70° to 90° lag = 11% UEI	≥90° lag = 30% UEI	
Forearm	40% Elbow					
Pronation		≥80° = 0%	70° to 50° = 1% UEI .	40° to 20° = 3% UEI	≤10° = 10% UEI	20° pronation = 8% UEI 30° to 60° pronation or 10° pronation to 20° supination = 15% UEI ≥70° pronation or ≥30° supination = 25% UEI
Supination		≥70° = 0%	60° to 50° = 1% UEI	40° to 20° = 2% UEI	≤10° = 10% UEI	

50 60

6th Impairment Calculation

1. Wrist -- Add Impairment by
   UE Imp% = (F+E) + (R+U)
   = (3+3) + (2+2) = 10%

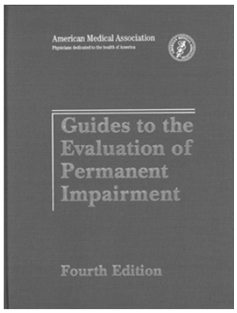
2. Wrist -- Add Impairment by
   UE Imp% = (F+E) + (R+U) + (S+P)
   = (3+3) + (2+2) +(1+2) = 13%

Compare Impairment Calculation

Colles' Fx	4th	5th	6th
F/E & R/U	14%	14%	10%
+ S/P	17%	17%	13%

4th Impairment Calculation

- Upper Limb Chapter 15 6th pages 383-492
- Chapter 1 and 2 rules



Lateral Epicondylitis

- A 35 year old right handed male electrician complains of pain in right elbow for over 2 years.
- He was treated with medications, modification of activities, multiple injections, and finally surgery.

Lateral Epicondylitis

Subjective (Functional)

- Now 6 months post surgery, he has returned to regular work, however his elbow still hurts with power grip and heavy lifts.
- He takes a few aspirins now and then, but is not on any prescription medications

Lateral Epicondylitis

Subjective (Functional)

- He still does his exercises once in a while
- He is able to do all of his ADLs without assistance
- His pain is 2 out of 10
- His QuickDASH is 61

Lateral Epicondylitis

PE

- Well healed right lateral epicondylar incision
- Normal color, warmth, hair pattern
- Slight tenderness to palpation
- Full A and PROM

X-rays (Clinical Studies)

- Normal bone & joint for age

Lateral Epicondylitis

- Grip right 31,32,33 kgs
  Grip left 34, 35, 36 kgs
- Rapid right 37,38,39,40,41
  Rapid left 37,39,38,40,41
- Five position right 31,31,31,31,31
- Five position left 34,35,35,36,36

4th Impairment Calculation

- Read the fine print
- There is no discussion for lateral epicondylitis
- How about tendinitis?
- 4th page 19 – cumulative trauma disorder – might help

4th Impairment Calculation

4th page 19 – cumulative trauma disorder – might help

- A patient with wrist or hand pain or other symptoms may not have evidence of a permanent impairment. Alteration of the patient's daily activities or work-related tasks may reduce the symptoms. Such an individual should not be considered to be permanently impaired under Guides criteria.

4th Impairment Calculation

Lat epi –

- Option 1 - no impairment
- Option 2 - Need to provide something – how about - Grip strength? The Guides Newsletter - no help for 4th edition
- Option 3 - 5th not much help
- Option 4 - Use the 6th as a guide

4th Impairment Calculation

Lat epi –

- In rare case, if loss of strength represents an impairing factor that has not been considered adequately, the loss of strength may be rated separately
- Strength loss is combined with other upper extremity impairments

4th Impairment Calculation

- 4th page 65 – if there is suspicion or evidence that the subject is exerting less than maximal effort, the grip strength measurements are invalid for estimating impairment
- But if it hurts you grip less
- Wide variations, in five, rapid exchange

4th Impairment Calculation

- Grip right 31,32,33 kgs
  Grip left 34, 35, 36 kgs
- Ok so lets use the above
- Strength index is calculated by
- (Normal – Abnormal) / (Normal)
- Ave 32 right (abnormal) and 35 left
- (35-32)/35 = 8.5% strength index

Impairment Calculation

1. At MMI (Maximum Medical Improvement)
2. Do you have all the information you need?
3. How do you approach the calculation?

UE - Impairment Calculation

1. Amputation
2. ROM (range of motion) default – inclusive of other considerations
3. Sensory loss (nerve)
4. Strength loss (motor)
5. Skin and soft tissue

4th Impairment Calculation

Example only -- do not do this

Table 34. Upper Extremity Impairment for Loss of Strength.

% Strength Loss Index	% Upper extremity impairment
10 - 30	10
31 - 60	20
61 - 100	30

Strength index 8.5% < 10 therefore no impairment

4th Impairment Calculation

Example only -- do not do this

Table 34. Upper Extremity Impairment for Loss of Strength.

% Strength Loss Index	% Upper extremity impairment
(10) - 30	(10)
31 - 60	20
61 - 100	30

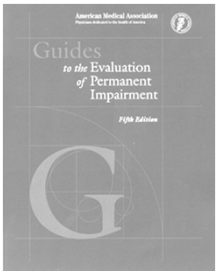
What if % Strength Loss Index was 10

UE - Impairment Calculation

1. Amputation - no
2. ROM (range of motion) default – inclusive of other considerations - no
3. Sensory loss (nerve) - no
4. Strength loss (motor) – ?
5. Skin and soft tissue - no

5th Impairment Calculation

- Upper Limb
  Chapter 16
  5th pages 433-522
- Chapter 1 and 2 rules

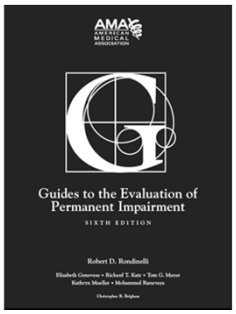


5th Impairment Calculation

1. 4th Edition Upper Extremity is Chapter 3
2. 5th Edition Upper Extremity is Chapter 16
3. All the tables and figures are the same but the numbers change
4. So – if you can do the 4th, you just completed the 5th

6th Impairment Calculation

- Upper Limb
  Chapter 15
  6th pages 383-492
- Chapter 1 and 2 rules



6th Impairment Calculation

1. Functional History
2. Physical Examination
3. Clinical Studies

6th Impairment Calculation

1. Amputation
2. ROM (range of motion) default – inclusive of other considerations
3. Sensory loss (nerve)
4. Strength loss (motor)
5. Skin and soft tissue
6. Functional history & clinical studies

6th Impairment Calculation

1. Diagnosis = anatomic region = elbow = Lateral Epicondylitis
2. Diagnosis-Based Impairment Regional Grid (DBI) – determine by Dx = 6th Table 15-4 Elbow – find Epicondylitis

6th Impairment Calculation

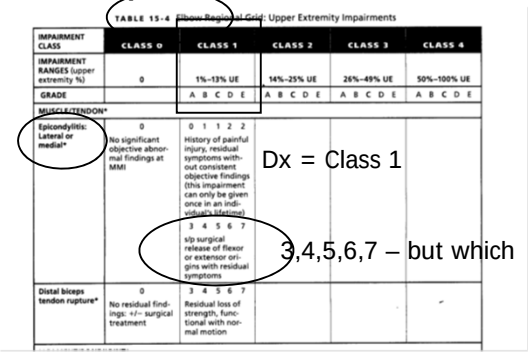


TABLE 15-4 Elbow Regional Grid: Upper Extremity Impairments

IMPAIRMENT CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RANGES (upper extremity %)	0	1%–13% UE	14%–25% UE	26%–49% UE	50%–100% UE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
MUSCLE/TENDON*					
Epicondylitis: Lateral or medial*	0 No significant objective abnormal findings at MMI	0 1 1 2 2 History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime)			
		3 4 5 6 7 s/p surgical release of flexor or extensor origins with residual symptoms			
Distal biceps tendon rupture*	0 No residual findings; +/– surgical treatment	3 4 5 6 7 Residual loss of strength, functional with normal motion			

Dx = Class 1

3,4,5,6,7 – but which

6th Impairment Calculation

3. Class - determine by Dx = Class 1
4. Grade modifier – determine by
   functional history
   physical examination
   clinical studies

6th Impairment Calculation

No ROM Loss – does not apply

* If motion loss present, this impairment may alternatively be assessed using Section 15.7, Range of Motion Impairment. A range of motion impairment stands alone and is not combined with diagnosis impairments (DBI). 6th page 397

6th Grade Modifiers

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		**A B C D E**	**A B C D E**	**A B C D E**	**A B C D E**
Grade modifiers		# # # # #	# # # # #	# # # # #	# # # # #
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Impairment Calculation

6th page 405 – Adjustment Grid and Grade Modifiers: Non-Key Factors

- Grade within a class is determined by considering

1. Functional history
2. Physical examination
3. Relevant clinical studies

6th Impairment Calculation

6th page 405 –

If a non-key factor or grade modifier was used for primary placement in the regional grid as, for example, physical findings = surgery for lateral epicondylitis, that same specific finding may not be used again to determine the grade modifier

6th Impairment Calculation

6th page 405 – Net adjustment allows for modification from default value of grade C within a given class

TABLE 15-6
Adjustment Grid: Summary

	Specific Adjustment Grid	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Functional History	Table 15-7	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Examination	Table 15-8	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	Table 15-9	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Impairment Calculation

6th page 406

Functional history grade modifier should be applied only to the single, highest diagnosis-based impairment (DBI). Specific jurisdictions may modify this process such that functional history adjustment is considered for each DBI or not considered at all as a grade modifier.

6th Impairment Calculation

6th page 406 - Functional History (FH) Grid

- Obtain from functional history or from use of QuickDASH
- Must assess the reliability of the functional reports
- Recognizing the potential influence of behavioral and psychosocial factors
- If the grade for functional history differs by 2 or more grades from class – FH is determined to be unreliable or inconsistent and is excluded

6th Impairment Calculation

Reported functional history

TABLE 15-7
Functional History Adjustment: Upper Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Class Definitions	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
	Asymptomatic	Pain/symptoms with strenuous/vigorous activity; +/– medication to control symptoms	Pain/ symptoms with normal activity; +/– medications to control symptoms +	Pain/symptoms with less than normal activity (minimal); +/– medications to control symptoms	Pain/symptoms at rest; +/– medications to control symptoms
		AND able to perform self-care activities independently	AND able to perform self-care activities with modification but unassisted	AND requires assistance to perform self-care activities	AND unable to perform self-care activities
QuickDASH Score	0–20	21–40	41–60	61–80	81–100

QuickDASH = 61

6th Impairment Calculation

6th page 406 – Functional History (FH) Grid

- So do you pick FH = 1 for the history you obtained or do you select 3 based on the QuickDASH?
- No – because if 2 or greater = invalid

6th Impairment Calculation

6th page 407 – Physical Examination (PE) Grid

- Determine the significance of the PE findings to diagnosis
- Greater weight given to “objective” findings
- If multiple Dx determine class for each Dx
- PE findings unreliable or inconsistent, or they are for conditions unrelated to condition being rated - excluded

6th Impairment Calculation

6th page 408 – Physical Examination (PE) Grid

- 6th Table 15-8

1. Observed and palpatory findings
2. Stability
3. Alignment/Deformity
4. Range of Motion
5. Muscle Atrophy

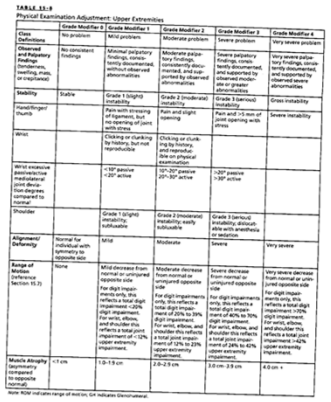


TABLE 15-9
Physical Examination Adjustment: Upper Extremities

Class Definitions	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Observed and Palpatory Findings (tenderness, guarding, pain, or crepitus)	No consistent findings	Minimal palpatory findings, consistently documented, without observed abnormalities	Moderate palpatory findings, consistently documented, and supported by observed abnormalities	Severe palpatory findings, consistently documented, and supported by observed moderate or greater abnormalities	Very severe palpatory findings, consistently documented, and supported by observed severe abnormalities
Stability	Stable	Grade 1 (slight) instability	Grade 2 (moderate) instability	Grade 3 (severe) instability	Gross instability
Hand/finger/ thumb		Pain with stressing of ligament, but no opening of joint with stress	Pain and slight opening	Pain and >5 mm of joint opening with stress	Severe instability
Wrist		Clicking or clunking by history, but not reproducible	Clicking or clunking by history, and reproducible by physical examination		
Wrist excessive palmar/ulnar mediolateral translation degrees compared to normal		<10° passive <20° active	10°–20° passive 20°–30° active	>20° passive >30° active	
Shoulder		Grade 1 (slight) instability; subluxable	Grade 2 (moderate) instability; easily subluxable	Grade 3 (serious) instability; dislocation with anesthesia or sedation	
Alignment/ Deformity	Normal for individual with symmetry to opposite side	Mild	Moderate	Severe	Very severe
Range of Motion (reference Section 15.3)	None	Mild decrease from normal or uninjured opposite side For digit impairments only, this reflects a total digit impairment <20% digit impairment. For wrist, elbow, and shoulder this reflects a total joint impairment of <12% upper extremity impairment.	Moderate decrease from normal or uninjured opposite side For digit impairments only, this reflects a total digit impairment of 20% to 39% digit impairment. For wrist, elbow, and shoulder this reflects a total joint impairment of 12% to 23% upper extremity impairment.	Severe decrease from normal or uninjured opposite side For digit impairments only, this reflects a total digit impairment of 40% to 70% digit impairment. For wrist, elbow, and shoulder this reflects a total joint impairment of 24% to 40% upper extremity impairment.	Very severe decrease from normal or uninjured opposite side For digit impairments only, this reflects a total digit impairment >70% digit impairment. For wrist, elbow, and shoulder this reflects a total joint impairment >40% upper extremity impairment.
Muscle Atrophy (asymmetry compared to opposite normal)	<1 cm	1.0–1.9 cm	2.0–2.9 cm	3.0 cm–3.9 cm	4.0 cm +

Note: ROM indicates range of motion; DIH, Hallucis Distal Interphalangeal.

6th Impairment Calculation

6th page 408 – Physical Examination (PE) Grid

- PE used to confirm Dx Class
- 6th Table 15-8 – not used

1. Observed and palpatory findings
2. Stability
3. Alignment/Deformity
4. Range of Motion
5. Muscle Atrophy

6th Impairment Calculation

6th page 407 – Clinical Studies (CS) Grid

Special testing (radiology, electrodiagnostic studies, imaging, etc)

Personally review studies when able – and comment on studies results

A positive image study does not make a Dx for class (they are supportive of Dx)

6th Impairment Calculation

6th page 410 – Clinical Studies (CS) Grid

6th Table 15-9

- Definitions

1. Imaging studies
2. X-rays
3. Stability
4. Nerve conduction testing

6th Impairment Calculation

6th page 410 – Clinical Studies (CS) Grid

6th Table 15-9

- Definitions

1. Imaging studies
2. X-rays (normal – would support Dx)
3. Stability
4. Nerve conduction testing

6th Impairment Calculation

TABLE 15-9
Clinical Studies Adjustment: Upper Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Class Definitions	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Imaging Studies	No available clinical studies or relevant findings	Clinical studies confirm diagnosis, mild pathology	Clinical studies confirm diagnosis, moderate pathology	Clinical studies confirm diagnosis, severe pathology	Clinical studies confirm diagnosis, very severe pathology
Shoulder			Clinical studies confirm one of the following symptomatic diagnoses: rotator cuff tear, SLAP or other labral lesion, biceps tendon pathology		Clinical studies confirm more than one of the following symptomatic diagnoses: rotator cuff tear, SLAP or other labral lesion, biceps tendon pathology. The most significant diagnosis is the only one rated.
X rays Arthritis		Cartilage interval normal or mild joint space narrowing and/or osteophytes	Cartilage interval: moderate joint space narrowing with cystic changes on 1 or both sides of joint and/or osteophytes; radiographic evidence of mild posttraumatic arthrosis; avascular necrosis without collapse	Cartilage interval severe joint space narrowing with cystic changes on both sides of joint and/or osteophytes; or avascular necrosis with bony collapse/fragmentation	No cartilage interval; radiographic evidence of severe posttraumatic arthrosis

6th Impairment Calculation

Net Adjustment Formula

GMFH = grade modifier functional history
GMPE = physical examination
GMCS = clinical studies
CDx = class of Dx (DBI) table

Net Adjustment = (GMFH-CDx) +
(GMPE-CDx) + (GMCS-CDx)

6th Impairment Calculation

Net Adjustment Formula

GMFH = functional history = 1 or 3
GMPE = physical examination = NA, used for Dx
GMCS = clinical studies = NA or 1
CDx = class of Dx (DBI) table = 1

Net Adjustment = (GMFH-CDx) +
(GMPE-CDx) + (GMCS-CDx) =

6th Impairment Calculation

Net Adjustment Formula

GMFH = functional history = 1 (not 3 because >2 = invalid but for example only)
GMPE = physical examination = NA, used for Dx
GMCS = clinical studies = NA or 1
CDx = class of Dx (DBI) table = 1

Net Adjustment = (GMFH-CDx) +
(GMPE-CDx) + (GMCS-CDx) =

1-1 + NA + 1-1 = 0 or
3-1 + NA + 1-1 = 2 (example only) or
3-1 + NA + NA = 2 (example only)

6th Grade Modifiers

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		A B C D E	A B C D E	A B C D E	A B C D E
Grade modifiers		# # # # #	# # # # #	# # # # #	# # # # #
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Grade Modifiers

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		A B C D E	A B C D E	A B C D E	A B C D E
Grade modifiers		# # # # #	# # # # #	# # # # #	# # # # #
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Impairment Calculation

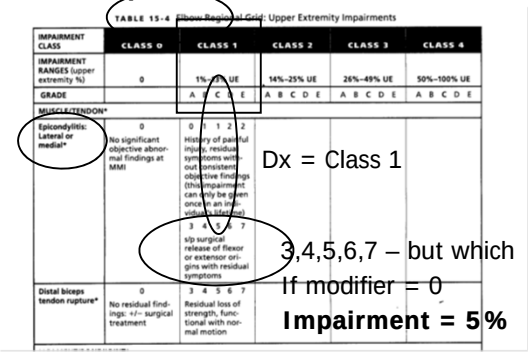


TABLE 15-4 Elbow Regional Grid: Upper Extremity Impairments

IMPAIRMENT CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RANGES (upper extremity %)	0	1%–13% UE	14%–25% UE	26%–49% UE	50%–100% UE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
MUSCLE/TENDON*					
Epicondylitis: Lateral or medial*	0 No significant objective abnormal findings at MMI	0 1 1 2 2 History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime)			
		3 4 5 6 7 s/p surgical release of flexor or extensor origins with residual symptoms			
Distal biceps tendon rupture*	0 No residual findings: +/– surgical treatment	3 4 5 6 7 Residual loss of strength, functional with normal motion			

Dx = Class 1

3,4,5,6,7 – but which

If modifier = 0

Impairment = 5%

6th Impairment Calculation

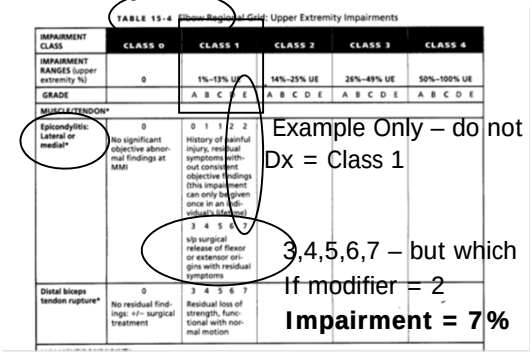


TABLE 15-4 Elbow Regional Grid: Upper Extremity Impairments

IMPAIRMENT CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RANGES (upper extremity %)	0	1%–13% UE	14%–25% UE	26%–49% UE	50%–100% UE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
MUSCLE/TENDON*					
Epicondylitis: Lateral or medial*	0 No significant objective abnormal findings at MMI	0 1 1 2 2 History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime)			
		3 4 5 6 7 s/p surgical release of flexor or extensor origins with residual symptoms			
Distal biceps tendon rupture*	0 No residual findings: +/– surgical treatment	3 4 5 6 7 Residual loss of strength, functional with normal motion			

Example Only – do not use

Dx = Class 1

3,4,5,6,7 – but which

If modifier = 2

Impairment = 7%

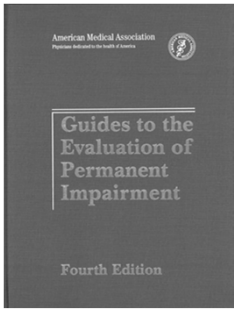
Compare Impairment Calculation

Lat Epi	4th	5th	6th
Functional	0%	0%	5%
+ Functional	0%	0%	7%

+ Functional – example only do not use >2 grades

4th Impairment Calculation

- Upper Limb Chapter 15 6th pages 383-492
- Chapter 1 and 2 rules



Rotator Cuff Tear

- A 50 year old right hand male painter has found it difficult to lift his right arm overhead to paint.
- Three years ago, he fell off a ladder and reached out with his right hand and semi-caught himself by holding onto a pipe.
- However, ever since this injury the right shoulder has been getting worse

Rotator Cuff Tear

- He had pain at night and with activities
- He found it difficult to do his job, comb his hair, shower
- After 3 months of physical therapy and 4 injections he was referred to an orthopaedic surgeon
- An MRI Confirmed a full thickness tear

Rotator Cuff Tear

Subjective (Functional)

- He is now 6 months post surgery
- He has been back to his regular work for three months but has a permanent work guide of limit right hand over shoulder activities
- He still has ache in morning or after a long work day

Rotator Cuff Tear

Subjective (Functional)

- He takes aspirin when it is cold out
- He can now shower and comb his hair but finds it hard to throw a fast ball to his son
- He is happy with the surgery
- His QuickDASH is 39

Rotator Cuff Tear

PE

- Well healed right shoulder deltoid splitting incision
- Normal color, warmth, hair pattern
- Full ROM but tender with abduction and external rotation

Studies

- MRI – full thickness tear without retraction
  Plain Films normal

Rotator Cuff Tear

Surgery

- Deltoid splitting approach
- Minimal retraction
- Direct repair without bone anchors
- Anterior acromioplasty was performed (underside of the acromion was deburred (thin slice shaved off) with a scope shaver

Rotator Cuff Tear

- Grip right 21,22,23 kgs
  Grip left 21, 22, 23 kgs
- rapid right 21,22,22,23,24
  rapid left 21,22,22,23,24
- Five position right 21,22,24,22,23
- Five position left 21,22,24,22,23

4th Impairment Calculation

- Read the fine print
- 4th - there is none

- Is he entitled to an impairment?
- How do you approach?

4th Impairment Calculation

- Range of Motion would be the easiest – some physicians might repeat his ROM measurements and complete this way
- Did someone say “arthroplasty”?
- First did he have a distal clavicle (isolated) arthroplasty?
- No

Rotator Cuff Tear

AMA press

American Medical Association

Physicians dedicated to the health of America

The Guides Newsletter

Expert advice, practical information, and current trends on impairment evaluation

May/June 2002

Also in this issue

Quick Consult

Legal Update: Catastrophic Impairment

Legal Update: Rating Pain—Chapter 18 and Workers' Compensation Systems

Impairment Tutorial: *Guides* Fifth Edition's Total Active

Acromioplasty: Is It An Impairment?

by Charles N. Brooks, MD

In 1972 Neer[1] reported that anatomical abnormalities of the anterior lip and inferior surface of the anterior third of acromion, particularly a "characteristic ridge of proliferative spurs and excrescences," could cause impingement on the underlying soft tissues, including subacromial bursa and rotator cuff tendons, primarily the supraspinatus. His classic article also described a new treatment for impingement, a type of partial (anterior-inferior) acromionectomy labeled acromioplasty, which was found to yield better results than total or lateral acromionectomy.

Rotator Cuff Tear

- Equating partial resection of the acromion with partial resection of the distal clavicle is both anatomically and physiologically inappropriate.
- Barring surgical complication, acromioplasty results in no ratable impairment.
- However, persons undergoing this procedure may have impairment due to decreased shoulder motions or strength.

Rotator Cuff Tear

- For educational purpose only
- How would you rate a removal of 2 cm or more of the distal clavicle?
- 4th Table 27 – after arthroplasty
- Determine level
- Provide impairment

Rotator Cuff Tear

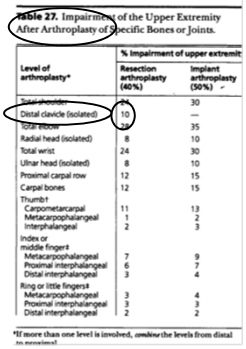


Table 27. Impairment of the Upper Extremity After Arthroplasty of Specific Bones or Joints.

Level of arthroplasty*	% Impairment of upper extremity: Resection arthroplasty (40%)	Implant arthroplasty (50%)
Total shoulder	24	30
Distal clavicle (isolated)	10	—
Total elbow	34	35
Radial head (isolated)	8	10
Total wrist	24	30
Ulnar head (isolated)	8	10
Proximal carpal row	12	15
Carpal bones	12	15
Thumb†		
Carpometarcarpal	11	13
Metacarpophalangeal	1	2
Interphalangeal	2	3
Index or middle finger‡		
Metacarpophalangeal	7	9
Proximal interphalangeal	6	7
Distal interphalangeal	3	4
Ring or little finger‡		
Metacarpophalangeal	2	4
Proximal interphalangeal	3	3
Distal interphalangeal	2	2

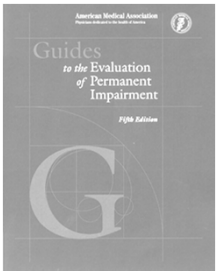
*If more than one level is involved, *combine* the levels from distal to proximal.

Rotator Cuff Tear

- What more information
- Orthopaedic Short Stories
- http://www5.aaos.org/case/rotator.htm

5th Impairment Calculation

- Upper Limb
  Chapter 16
  5th pages 433-522
- Chapter 1 and 2 rules

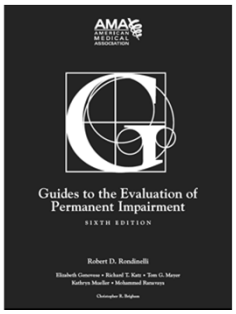


5th Impairment Calculation

1. 4th Edition Upper Extremity is Chapter 3
2. 5th Edition Upper Extremity is Chapter 16
3. All the tables and figures are the same but the numbers change
4. So – if you can do the 4th, you just completed the 5th

6th Impairment Calculation

- Upper Limb
  Chapter 15
  6th pages 383-492
- Chapter 1 and 2 rules



6th Impairment Calculation

1. Functional History
2. Physical Examination
3. Clinical Studies

6th Impairment Calculation

1. Amputation
2. ROM (range of motion) default – inclusive of other considerations
3. Sensory loss (nerve)
4. Strength loss (motor)
5. Skin and soft tissue
6. Functional history & clinical studies

6th Impairment Calculation

1. Diagnosis = anatomic region = shoulder = rotator cuff tear
2. Diagnosis-Based Impairment Regional Grid (DBI) – determine by Dx = 6th Table 15-5 Shoulder – find rotator cuff injury, full-thickness tear *
   * can use ROM if limited – not in this example

6th Impairment Calculation

TABLE 15-5 Shoulder Regional Grid: Upper Extremity Impairments

IMPAIRMENT CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RANGES (upper extremity %)	0	1%–13% UE	14%–25% UE	26%–49% UE	50%–100% UE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
LIGAMENT/BONE/JOINT*					
Rotator cuff injury, full-thickness tear*	0	1 2 3 4 5			
	No significant objective abnormal findings at MMI	History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime)			
		3 4 5 6 7			
		Residual loss, functional with normal motion			
Acromiocla-	0	1 2 3 4 5	16 18 20 22 24		

Normal ROM

* If motion loss

6th Impairment Calculation

3. Class - determine by Dx = Class 1
4. Grade modifier – determine by
   functional history
   physical examination
   clinical studies

Options 3 4 5 6 7 (need modifiers)

6th Impairment Calculation

No ROM Loss – does not apply

* If motion loss present, this impairment may alternatively be assessed using Section 15.7, Range of Motion Impairment. A range of motion impairment stands alone and is not combined with diagnosis impairments (DBI). 6th page 397

6th Impairment Calculation

6th page 465 – Grade modifiers

Grade Modifier	Severity	Range of Motion
0	Normal	
1	Mild	60%–90% of normal motion (average: 75% of normal motion)
2	Moderate	30%–60% of normal motion (average: 45% of normal motion)
3	Severe	<30% of normal motion (average: 15% of normal motion)
4	Very severe	Joint ankylosis

6th Grade Modifiers

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		A B C D E	A B C D E	A B C D E	A B C D E
Grade modifiers		# # # # #	# # # # #	# # # # #	# # # # #
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Impairment Calculation

6th page 405 – Adjustment Grid and Grade Modifiers: Non-Key Factors

- Grade within a class is determined by considering

1. Functional history
2. Physical examination
3. Relevant clinical studies

6th Impairment Calculation

6th page 405 –

If a non-key factor or grade modifier was used for primary placement in the regional grid as, for example, physical findings = surgery for lateral epicondylitis, that same specific finding may not be used again to determine the grade modifier

6th Impairment Calculation

6th page 405 – Net adjustment allows for modification from default value of grade C within a given class

TABLE 15-6
Adjustment Grid: Summary

	Specific Adjustment Grid	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Functional History	Table 15-7	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Examination	Table 15-8	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	Table 15-9	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Impairment Calculation

6th page 406

Functional history grade modifier should be applied only to the single, highest diagnosis-based impairment (DBI). Specific jurisdictions may modify this process such that functional history adjustment is considered for each DBI or not considered at all as a grade modifier.

6th Impairment Calculation

6th page 406 - Functional History (FH) Grid

- Obtain from functional history or from use of QuickDASH
- Must assess the reliability of the functional reports
- Recognizing the potential influence of behavioral and psychosocial factors
- If the grade for functional history differs by 2 or more grades from class – FH is determined to be unreliable or inconsistent and is excluded

6th Impairment Calculation

Reported functional history

TABLE 15-7
Functional History Adjustment: Upper Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Class Definitions	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
	Asymptomatic	Pain/symptoms with strenuous/vigorous activity; +/– medication to control symptoms	Pain/ symptoms with normal activity; +/– medications to control symptoms	Pain/symptoms with less than normal activity (minimal); +/– medications to control symptoms	Pain/symptoms at rest; +/– medications to control symptoms
		AND able to perform self-care activities independently	AND able to perform self-care activities with modification but unassisted	AND requires assistance to perform self-care activities	AND unable to perform self-care activities
QuickDASH Score	0–20	21–40	41–60	61–80	81–100

QuickDASH = 39

6th Impairment Calculation

6th page 406 – Functional History (FH) Grid

- FH and QuickDASH same – that is always nice FH = 1
- Confirm valid

6th Impairment Calculation

6th page 407 – Physical Examination (PE) Grid

- Determine the significance of the PE findings to diagnosis
- Greater weight given to "objective" findings
- If multiple Dx determine class for each Dx
- PE findings unreliable or inconsistent, or they are for conditions unrelated to condition being rated - excluded

6th Impairment Calculation

6th page 408 – Physical Examination (PE) Grid

- 6th Table 15-8

1. Observed and palpatory findings
2. Stability
3. Alignment/Deformity
4. Range of Motion
5. Muscle Atrophy

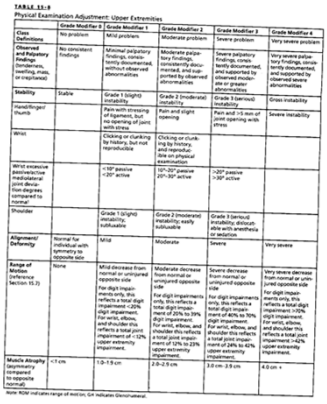


TABLE 15-8
Physical Examination Adjustment: Upper Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Class Definitions	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Observed and Palpatory Findings (tenderness, swelling, mass, or crepitance)	No consistent findings	Minimal palpatory findings, consistently documented, without observed abnormalities	Moderate palpatory findings, consistently documented, and supported by observed abnormalities	Severe palpatory findings, consistently documented, and supported by observed moderate or greater abnormalities	Very severe palpatory findings, consistently documented, and supported by observed severe abnormalities
Stability	Stable	Grade 1 (slight) instability	Grade 2 (moderate) instability	Grade 3 (severe) instability	Gross instability
Hand/finger/thumb		Pain with stressing of ligament, but no opening of joint with stress	Pain and slight opening	Pain and >5 mm of joint opening with stress	Severe instability
Wrist		Clicking or clunking by history, but not reproducible	Clicking or clunking by history, and reproducible on physical examination		
Wrist excessive passive/active mediolateral joint deviation degrees compared to normal		<10° passive <20° active	10°–20° passive 20°–30° active	>20° passive >30° active	
Shoulder		Grade 1 (slight) instability, subluxable	Grade 2 (moderate) instability; easily subluxable	Grade 3 (severe) instability; dislocates with anesthesia or sedation	
Alignment/ Deformity	Normal for individual with symmetry to opposite side	Mild	Moderate	Severe	Very severe
Range of Motion (reference Section 15.2)	None	Mild decrease from normal or uninjured opposite side For digit impairments only, this reflects a total digit impairment <25% digit impairment. For wrist, elbow, and shoulder this reflects a total joint impairment of <12% upper extremity impairment.	Moderate decrease from normal or uninjured opposite side For digit impairments only, this reflects a total digit impairment of 25% to 50% digit impairment. For wrist, elbow, and shoulder this reflects a total joint impairment of 12% to 22% upper extremity impairment.	Severe decrease from normal or uninjured opposite side For digit impairments only, this reflects a total digit impairment of 40% to 70% digit impairment. For wrist, elbow, and shoulder this reflects a total joint impairment of 24% to 42% upper extremity impairment.	Very severe decrease from normal or uninjured opposite side For digit impairments only, this reflects a total digit impairment >70% digit impairment. For wrist, elbow, and shoulder this reflects a total joint impairment >42% upper extremity impairment.
Muscle Atrophy (asymmetry compared to opposite normal)	<1 cm	1.0–1.9 cm	2.0–2.9 cm	3.0 cm–3.9 cm	4.0 cm +

Note: ROM indicates range of motion; GH, indicates Glenohumeral.

6th Impairment Calculation

6th page 408 – Physical Examination (PE) Grid

- PE used to confirm Dx Class (or did we used MRI = Clinical Studies)
- 6th Table 15-8 – not used

1. Observed and palpatory findings
2. Stability
3. Alignment/Deformity
4. Range of Motion
5. Muscle Atrophy

6th Impairment Calculation

6th page 407 – Clinical Studies (CS) Grid

Special testing (radiology, electrodiagnostic studies, imaging, etc)

Personally review studies when able – and comment on studies results

A positive image study does not make a Dx for class (they are supportive of Dx)

6th Impairment Calculation

6th page 410 – Clinical Studies (CS) Grid

6th Table 15-9

- Definitions

1. Imaging studies
2. X-rays
3. Stability
4. Nerve conduction testing

MRI used to confirm but PE used for DBI

6th Impairment Calculation

6th page 410 – Clinical Studies (CS) Grid
6th Table 15-9

- Definitions

1. Imaging studies
2. X-rays (also normal – would support Dx)
3. Stability
4. Nerve conduction testing

6th Impairment Calculation

TABLE 15-9
Clinical Studies Adjustment: Upper Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Class Definitions	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Imaging Studies	No available clinical studies or relevant findings	Clinical studies confirm diagnosis, mild pathology	Clinical studies confirm diagnosis, moderate pathology	Clinical studies confirm diagnosis, severe pathology	Clinical studies confirm diagnosis, very severe pathology
Shoulder			Clinical studies confirm one of the following symptomatic diagnoses: rotator cuff tear, SLAP or other labral lesion, biceps tendon pathology		Clinical studies confirm more than one of the following symptomatic diagnoses: rotator cuff tear, SLAP or other labral lesion, biceps tendon pathology. The most significant diagnosis is the only one rated.
X rays					
Arthritis		Cartilage interval normal or mild joint space narrowing and/or osteophytes	Cartilage interval: moderate joint space narrowing with cystic changes on 1 or both sides of joint and/or osteophytes; radiographic evidence of mild posttraumatic arthrosis; avascular necrosis without collapse	Cartilage interval severe joint space narrowing with cystic changes on both sides of joint and/or osteophytes; or avascular necrosis with bony collapse/fragmentation	No cartilage interval; radiographic evidence of severe posttraumatic arthrosis

6th Impairment Calculation

Net Adjustment Formula

GMFH = grade modifier functional history
GMPE = physical examination
GMCS = clinical studies
CDx = class of Dx (DBI) table

Net Adjustment = (GMFH-CDx) +
(GMPE-CDx) + (GMCS-CDx)

6th Impairment Calculation

Net Adjustment Formula

GMFH = functional history = 1
GMPE = physical examination = NA, used for Dx
GMCS = clinical studies = 2
CDx = class of Dx (DBI) table = 1

Net Adjustment = (GMFH-CDx) +
(GMPE-CDx) + (GMCS-CDx) =

6th Impairment Calculation

Net Adjustment Formula

GMFH = functional history = 1
GMPE = physical examination = NA, used for Dx
GMCS = clinical studies = 2
CDx = class of Dx (DBI) table = 1

Net Adjustment = (GMFH-CDx) +
(GMPE-CDx) + (GMCS-CDx) =

1-1 + NA + 2-1 = 1

6th Grade Modifiers

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		A B C D E	A B C D E	A B C D E	A B C D E
Grade modifiers		# # # # #	# # # # #	# # # # #	# # # # #
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Impairment Calculation

TABLE 15-5 Shoulder Regional Grid: Upper Extremity Impairments

IMPAIRMENT CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RANGES (upper extremity %)	0	1%–13% UE	14%–25% UE	26%–49% UE	50%–100% UE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
LIGAMENT/BONE/JOINT*					
Rotator cuff injury, full-thickness tear*	0 No significant objective abnormal findings at MMI	1 2 3 4 5 History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime) 3 4 5 6 7 Residual loss, functional with normal motion			
Acromiocla-	0	1 2 3 4 5	16 18 20 22 24		

Dx = Class 1

3,4,5,6,7 – but which

If modifier = 1

Impairment = 6%

6th Impairment Calculation

- Finally Done
- But Wait
- What if you considered the MRI = Clinical Studies (CS) as the criteria for determined DBI and not the Physical Examination (PE)
- Do I really have to do it again? Yes

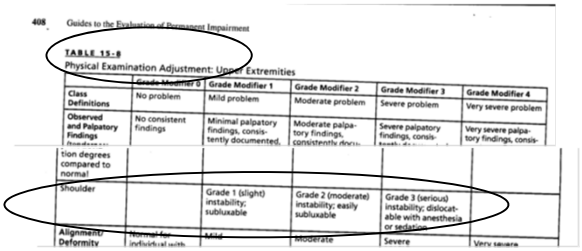
6th Impairment Calculation

Net Adjustment Formula

GMFH = functional history = 1
GMPE = physical examination = no adjustment
GMCS = clinical studies = NA, used for Dx
CDx = class of Dx (DBI) table = 1

Net Adjustment = (GMFH-CDx) +
(GMPE-CDx) + (GMCS-CDx) =

6th Impairment Calculation



408 Guides to the Evaluation of Permanent Impairment

TABLE 15-8
Physical Examination Adjustment: Upper Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Class Definitions	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Observed and Palpatory Findings	No consistent findings	Minimal palpatory findings, consistently documented,	Moderate palpatory findings, consistently	Severe palpatory findings, consistently	Very severe palpatory findings, consis-
tion degrees compared to normal					
Shoulder		Grade 1 (slight) instability; subluxable	Grade 2 (moderate) instability; easily subluxable	Grade 3 (serious) instability; dislocatable with anesthesia or sedation	
Alignment/ Deformity	Normal for individual with	Mild	Moderate	Severe	Very severe

Nothing fits – so NA or wrong approach?

6th Impairment Calculation

Net Adjustment Formula

GMFH = functional history = 1
GMPE = physical examination = NA, nothing fits
GMCS = clinical studies = NA, used for Dx
CDx = class of Dx (DBI) table = 1

Net Adjustment = (GMFH-CDx) +
(GMPE-CDx) + (GMCS-CDx) =

1-1 + NA + NA = 0

6th Grade Modifiers

Dx =					
Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
Ranges	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
Grade		A B C D E	A B C D E	A B C D E	A B C D E
Grade modifiers		# # # # #	# # # # #	# # # # #	# # # # #
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

6th Impairment Calculation

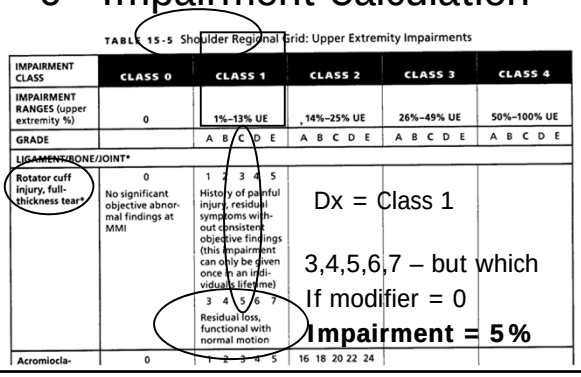


TABLE 15-5 Shoulder Regional Grid: Upper Extremity Impairments

IMPAIRMENT CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RANGES (upper extremity %)	0	1%–13% UE	14%–25% UE	26%–49% UE	50%–100% UE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
LIGAMENT/BONE/JOINT*					
Rotator cuff injury, full-thickness tear*	0 No significant objective abnormal findings at MMI	1 2 3 4 5 History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individuals lifetime) 3 4 5 6 7 Residual loss, functional with normal motion			
Acromiocla-	0	1 2 3 4 5	16 18 20 22 24		

Dx = Class 1

3,4,5,6,7 – but which

If modifier = 0

Impairment = 5%

6th Impairment Calculation

- OK – so you use the highest impairment

  DBI by PE is 6%

  DBI by CS is 5%

Significant Comment in ERRATA

SIGNIFICANT

Page 387, Right Column, Paragraph 4

and biceps tendonitis, the examiner should use the diagnosis with the highest causally related impairment rating for the impairment calculation. Thus, when rating rotator cuff injury/impingement or glenohumeral pathology/surgery, incidental resection arthroplasty of the AC joint is not rated.

Compare Impairment Calculation

Rotator	4th	5th	6th
DBI by PE	0%	0%	6%
DBI by CS	0%	0%	5%

Thank You for Your Attention

An Orthopaedist's Introduction Upper Limb Examples

J Mark Melhorn MD
The Hand Center
625 N Carriage Parkway Suite 125
Wichita, KS 67208-4510
316-688-5656 melhorn@CtdMAP.com

General Disclaimer

- All photographs, drawings, figures, and tables remain the property of the first author. The first author grants the use of these materials for this specific publication and all future publications based on this specific article in paper, electronic, or other format.
- 2004 Disclaimer: The academy, editors, course chairs, and authors of this material provide this information for guides for practitioners and notes that decisions to adopt particular courses of actions must be made by trained practitioners and on the basis of the available resources and the particular circumstances presented by the individual patient. Accordingly, the above disclaims responsibility for any injury or damage resulting from actions taken by practitioners after considering these guides.

Additional Reading

AAOS 13th Annual 2011

- Nov 4, 5, 6
- Occupational Orthopaedics & Workers' Compensation: A Multidisciplinary Perspective
-

Resources

- Or9540

AMA Guides 6th Edition

2011 AAOS Annual Meeting

San Diego, February 16, 2011

J. Mark Melhorn MD

James B. Talmage MD

Three (3) hour workshop

1

Questions ?

J. Mark Melhorn MD

The Hand Center

625 N. Carriage Parkway

Suite 125

Wichita, KS 67208-4510

melhorn@onemain.com

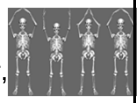
316-688-5656

2

Questions ?

James B. Talmage MD,

Occupational Health Center,



315 N. Washington Ave, Suite 165

Cookeville, TN 38501

Phone 931-526-1604 (Fax 526-7378)

olddrt@frontiernet.net

olddrt@occhealth.md

3

James B. Talmage MD

Financial "Conflict of Interest" Disclosure

- "Reviewer", *AMA Guides, 5th Edition*
- Associate Editor, the *Guides Newsletter*
  - *PAID*
- Co-Editor & Co-Author, the *Guides Casebook, 2nd Edition*
  - PAID
- Co-Editor & Co-Author, *A Physicians Guide to Return to Work*
  - PAID royalties
- Consultant: Guides Impairment Calculator software
  - PAID

4

James B. Talmage MD

Financial "Conflict of Interest" Disclosure

- Co-Author, *AMA Guides, 6th Edition*
  - PAID
- Member, 6th Edition Errata Committee
  - PAID
- PAID consultant:
  - Impairment & Disability Products
- Author: Guides Sixth Impairment Training Workbooks:
  - Spine PAID
  - Lower Extremity PAID
  - Neurology, Psychiatry, & Pain PAID

5

The speaker is the current President Elect of

AADEP
AMERICAN ACADEMY OF DISABILITY EVALUATING PHYSICIANS™

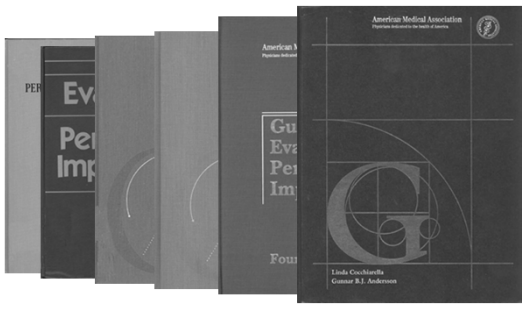
"The premiere society for the prevention and management of disability"

For more information, contact AADEP @ **1-800-456-6095**

or visit our website @ **www.aadep.org**

6

AMA *Guides* – Work in Progress
Gradual, Incremental Change

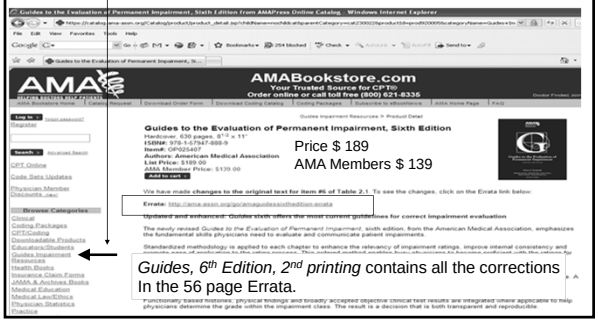


History of the *AMA Guides*

- 1956 - ad hoc committee
- 1958-1970 - 13 publications in JAMA
- 1971 - First Edition
- 1981 - established 12 expert panels
- 1984 - Second Edition
- 1988 - Third Edition
- 1990 - Third Edition-Revised
- 1993 - Fourth Edition (4 printings)
- **2000 – Fifth Edition (November 2000)**
- **2007 (December) – Sixth Edition**
  - **Radical paradigm shift**

8

AMA 6th Edition
www.amapress.org
Click on "Guides Impairment Resources"



Guides, 6th Edition, 2nd printing contains all the corrections In the 56 page Errata.

Concepts Important to the Independent Medical Examiner

- Legal vs Medical Possibility and Probability
- Causality, Exacerbation, and Aggravation
- Apportionment
- **Changes in Impairment from Prior Ratings**
- Maximum Medical Improvement
- Permanency
- Cultural Differences

2. Practical Application of the *Guides*

10

Concepts Important to the Independent Medical Examiner

- **Changes in Impairment from Prior Ratings**
- "The physician should assess the current state of the impairment according to the criteria in the *Guides*. If an individual received an impairment rating from an earlier edition and needs to be reevaluated because of a change in the medical condition, the individual is **evaluated according** to the latest information pertaining to the condition in **the current edition of the *Guides*."**

11

2. Practical Application of the *Guides: page 26*

Concepts Important to the Independent Medical Examiner

- **Changes in Impairment from Prior Ratings**
- "If a prior impairment evaluation was not performed, but sufficiently well documented information is available to currently estimate the prior impairment, the assessment would be performed **based on the most recent** Guides' criteria."

12

2. Practical Application of the *Guides: page 26*

Concepts Important to the Independent Medical Examiner

•Changes in Impairment from Prior Ratings

•"However, if the information is insufficient to accurately document the change, the physician must explain the basis of a prior determination and **should not estimate the change."**

2. Practical Application of the *Guides: page 26*

13

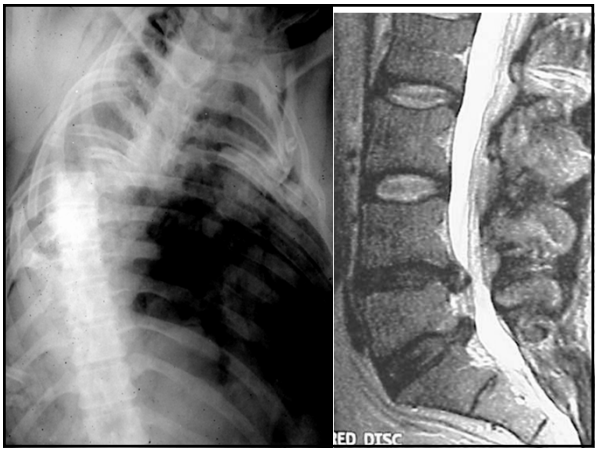
TRANSLATION:

- Joe had a prior rotator cuff repair, and received an 18% UEI rating.
- Joe re-injures his shoulder.
  - He says he is worse.
  - ROM is about the same.
- 6th Edition says he has a 9% UEI.
- "However, if the information is insufficient to accurately document the change, the physician must explain the basis of a prior determination and **should not estimate the change**."
- In deposition: "I can **not** estimate how much his impairment changed." – page 26

14

Do whatever Workers' Comp Bureau or the Lawyers say

15



Case #1: Low Back Strain, Resolved

- Mr. A is a 35 year old with no prior history of low back pain.
- He works as a manual material handler in a warehouse.
- He strained his back lifting a box and twisting.
- He had the acute onset of low back and left buttock pain without any leg symptoms.

17

Case #1: Low Back Strain, Resolved

- On the day of injury, and also 1 week later:
  - "Spasm" with a 10° forward list, trunk deviation to the left during flexion, and a "sciatic scoliosis."
  - Neurologic exam was normal.
  - Straight leg raising produced only low back pain at 40° of elevation of either leg.

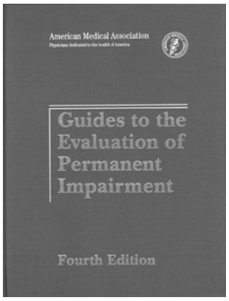
18

Case #1: Low Back Strain, Resolved

- At 3 weeks, 6 weeks, and 6 months post injury:
  - No low back pain.
  - No leg pain or numbness.
  - No medications used (OTC or Rx).
  - Normal physical exam.
  - Working full duty without absences.

19

Case #1: Low Back Strain, Resolved AMA Guides, 4th Edition Rating

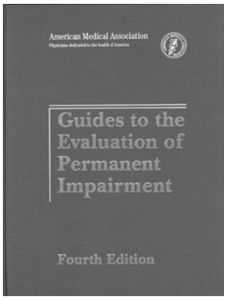


- The 4th Edition contains 2 different methodologies for rating spinal impairment:
  - Injury Model (DRE)
  - Range of Motion Model (ROM)

20

Case #1: Low Back Strain, Resolved AMA Guides, 4th Edition Rating

- **Use the Injury Model**, **unless** the individual does not fit with the conditions in Table 70, page 108.
  - Page 101
- This means all spine injuries are to be rated using the Injury Model.



21

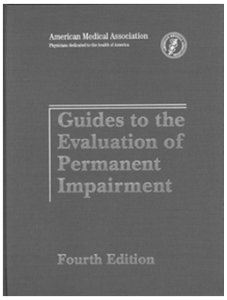
Table 70. Spine Impairment Categories for Cervicothoracic, Thoracolumbar, and Lumbosacral Regions.

4th Edition, page 108

Patient's condition	Category I	II	III	IV	V	Category * VI	VII	VIII
Complaints or symptoms	I							
Vertebral body compression, less than 25%		II						
Posterior element fracture, healed, stable, no dislocation or radiculopathy		II						
Transverse or spinous process fracture with dislocation of fragment, healed, stable		II						
Vertebral body compression fracture 25%–50%			III					
Posterior element fracture with spinal canal displacement or radiculopathy, healed, stable			III					
Radiculopathy			III					
Loss of motion segment integrity				IV				
Vertebral body compression, greater than 50%				IV	V			
Multilevel structural compromise				IV	V			
Cauda equina syndrome *without* bowel or bladder impairment						VI		
Cauda equina syndrome *with* bowel or bladder impairment							VII	
Paraplegia								VIII
Spondylolysis *without* loss of motion segment integrity or radiculopathy	I	II						
Spondylolysis *with* loss of motion segment integrity or radiculopathy			III	IV	V			
Spondylolisthesis *without* loss of motion segment integrity or radiculopathy	I	II						
Spondylolisthesis *with* loss of motion segment integrity or radiculopathy			III	IV	V			
Spondylolisthesis *with* cauda equina syndrome						VI	VII	VIII
Vertebral body fracture *without* loss of motion segment integrity or radiculopathy		II	III	IV				
Vertebral body fracture *with* loss of motion segment integrity or radiculopathy			III	IV	V			

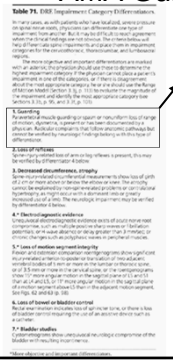
Case #1: Low Back Strain, Resolved AMA Guides, 4th Edition Rating

- Use Table 71, Differentiators to help place the individual in a DRE Class.



23

Case #1: Low Back Strain, Resolved AMA Guides, 4th Edition Rating



1. Guarding
Paravertebral muscle guarding or spasm or nonuniform loss of range of motion, dysmetria, is present or has been documented by a physician. Radicular complaints that follow anatomic pathways but cannot be verified by neurologic findings belong with this type of differentiator.

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).

Case #1: Low Back Strain, Resolved AMA Guides, 4th Edition Rating

- The 4th Edition DRE system allows the examiner to **rate the severity of the injury**, and not necessarily the degree of recovery at MMI.
- Mr. A is eligible for a **DRE II, or 5% WPI** rating, due to the presence of "spasm" early on, **despite full apparent recovery**.
  - Some MDs disagree and rate at 0% in view of full recovery, ignoring the "spasm" documented in the early medical records.

25

Case #1: Low Back Strain, Resolved AMA Guides, 5th Edition Rating

- The DRE method and the Range of Motion Method are both still in the 5th Edition.
- "The DRE method is the **principle methodology** used to evaluate an individual who has had a **distinct injury**."
  - Page 372

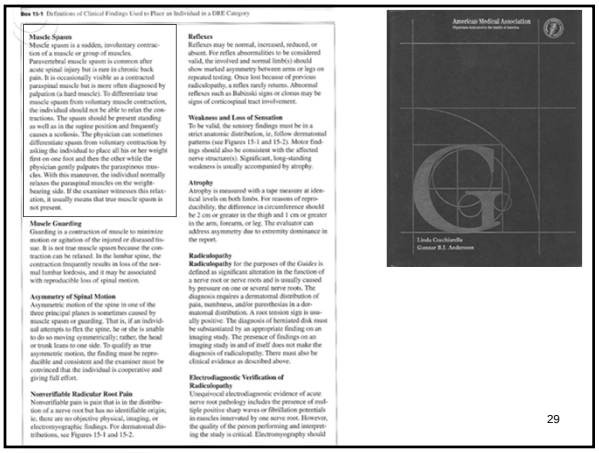
Case #1: Low Back Strain, Resolved AMA Guides, 5th Edition Rating

- "Since an **individual is evaluated after having reached MMI**, a **previous history of objective findings may not define the current, ratable condition** but is important in determining the course and whether MMI has been reached. *The impairment rating is based on the condition once MMI is reached, not on prior symptoms or signs.* "
  - Page 383

Case #1: Low Back Strain, Resolved AMA Guides, 5th Edition Rating

- At MMI: No symptoms, No medications, Normal Exam, No missed work.
- Thus, at MMI, DRE Category I = 0 % WPI.

28



Box 15-1 Definitions of Clinical Findings Used to Place an Individual in a DRE Category

Muscle Spasm
Muscle spasm is a sudden, involuntary contraction of a muscle or group of muscles. Paravertebral muscle spasm is common after acute spinal injury but is rare in chronic back pain. It is occasionally visible as a contracted paraspinal muscle but is more often diagnosed by palpation (a hard muscle). 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 and frequently causes a scoliosis. The physician can sometimes differentiate spasm from voluntary contraction by asking the individual to place all his or her weight first on one foot and then the other while the physician gently palpates the paraspinous muscles. With this maneuver, the individual normally relaxes the paraspinal muscles on the weight-bearing side. If the examiner witnesses this relaxation, it usually means that true muscle spasm is not present.

Muscle Guarding
Guarding is a contraction of 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 lumbar spine, the contraction frequently results in loss of the normal lumbar lordosis, and it may be associated with reproducible loss of spinal motion.

Asymmetry of Spinal Motion
Asymmetric motion of the spine in one of the three principal planes is sometimes caused by muscle spasm or guarding. That is, if an individual attempts to flex the spine, he or she is unable to do so moving symmetrically; rather, the head or trunk leans to one side. To qualify as true asymmetric motion, the finding must be reproducible and consistent and the examiner must be convinced that the individual is cooperative and giving full effort.

Nonverifiable Radicular Root Pain
Nonverifiable pain is pain that is in the distribution of a nerve root but has no identifiable origin; ie, there are no objective physical, imaging, or electromyographic findings. For dermatomal distributions, see Figures 15-1 and 15-2.

Reflexes
Reflexes may be normal, increased, reduced, or absent. For reflex abnormalities to be considered valid, the involved and normal limb(s) should show marked asymmetry between arms or legs on repeated testing. Once lost because of previous radiculopathy, a reflex rarely returns. Abnormal reflexes such as Babinski signs or clonus may be signs of corticospinal tract involvement.

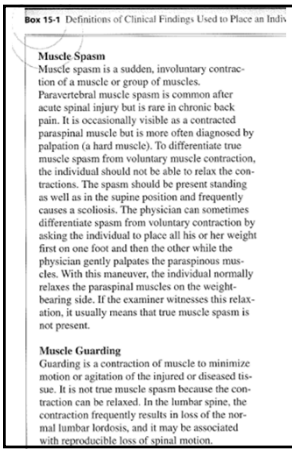
Weakness and Loss of Sensation
To be valid, the sensory findings must be in a strict anatomic distribution, ie, follow dermatomal patterns (see Figures 15-1 and 15-2). Motor findings should also be consistent with the affected nerve structure(s). Significant, long-standing weakness is usually accompanied by atrophy.

Atrophy
Atrophy is measured with a tape measure at identical levels on both limbs. For reasons of reproducibility, the difference in circumference should be 2 cm or greater in the thigh and 1 cm or greater in the arm, forearm, or leg. The evaluator can address asymmetry due to extremity dominance in the report.

Radiculopathy
Radiculopathy for the purposes of the *Guides* is defined as significant alteration in the function of a nerve root or nerve roots and is usually caused by pressure on one or several nerve roots. The diagnosis requires a dermatomal distribution of pain, numbness, and/or paresthesias in a dermatomal distribution. A root tension sign is usually positive. The diagnosis of herniated disk must be substantiated by an appropriate finding on an imaging study. The presence of findings on an imaging study in and of itself does not make the diagnosis of radiculopathy. There must also be clinical evidence as described above.

Electrodiagnostic Verification of Radiculopathy
Unequivocal electrodiagnostic evidence of acute nerve root pathology includes the presence of multiple positive sharp waves or fibrillation potentials in muscles innervated by one nerve root. However, the quality of the person performing and interpreting the study is critical. Electromyography should

29



Box 15-1 Definitions of Clinical Findings Used to Place an Indiv

Muscle Spasm
Muscle spasm is a sudden, involuntary contraction of a muscle or group of muscles. Paravertebral muscle spasm is common after acute spinal injury but is rare in chronic back pain. It is occasionally visible as a contracted paraspinal muscle but is more often diagnosed by palpation (a hard muscle). 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 and frequently causes a scoliosis. The physician can sometimes differentiate spasm from voluntary contraction by asking the individual to place all his or her weight first on one foot and then the other while the physician gently palpates the paraspinous muscles. With this maneuver, the individual normally relaxes the paraspinal muscles on the weight-bearing side. If the examiner witnesses this relaxation, it usually means that true muscle spasm is not present.

Muscle Guarding
Guarding is a contraction of 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 lumbar spine, the contraction frequently results in loss of the normal lumbar lordosis, and it may be associated with reproducible loss of spinal motion.

Box 15-1 – **DRE Method**
"Spasm" is rare in chronic Back pain. P 382
Yet implies this **can be** Used to rate impairment.

Range of Motion Method, page 399
"… **if acute muscle spasm is present**, … the mobility measurements would **Not be valid** for estimating permanent impairment. Because the Guides considers only permanent impairment, **rating should be deferred** until after any acute exacerbation of the chronic condition has subsided, ie, when the **Individual is at MMI.**

30

Reproducibility of Examination

κ = Kappa	**Agreement**
> 0.20	fair
> 0.40	moderate
>0.60	good
>0.80	excellent
1.00	perfect

31

Tenderness
JAMA 1992; 268 (6): 760-765

Finding	**Unit of measurement**	**Kappa Interobserver**
Bone tenderness	Yes/no	0.40
Soft-tissue tenderness	Yes/no	0.24
Muscle spasm	**Yes/no**	**Discarded***

* = Discarded "too unreliable"

32

Muscle Spasm?

- Backache patients with "spasm" have **electrically silent muscles on needle EMG**.
- Body building and Physical Therapy literature says ISOMETRIC contraction is the best way to build muscle size.
  - **Chronic spasm = sustained isometric contraction**
  - YET, MRI on chronic back pain patients with "spasm" shows **muscle atrophy and fatty infiltration**.
- Why do **only** muscles near the spine "spasm"?
  - There are many painful disorders of the limbs, and those muscles do **not** "spasm".

33

Guides to the Evaluation of Permanent Impairment Sixth Edition

Chapter 17
The Spine and Pelvis

34

"The impairment rating process has been simplified by providing a congruent rating methodology among the three musculoskeletal chapters.

Once the examiner masters the methodology in one chapter, that same methodology applies to the other chapters."

35

DBI Method

Impairment class is determined by the diagnosis and specific criteria that are considered the "key factor" and then adjusted by grade modifiers, or " non-key factors"

TABLE 17-1
Definition of Impairment Classes and Impairment Ranges

		Whole-Person Impairment (%)			
Class	Problem	Cervical Spine	Thoracic Spine	Lumbar Spine	Pelvis
0	No objective findings	0%	0%	0%	0%
1	Mild	1%-3%	1%-3%	1%-3%	1%-3%
2	Moderate	3%-14%	3%-11%	3%-14%	3%-6%
3	Severe	11%-24%	12%-16%	15%-24%	7%-11%
4	Very Severe	21%-30%	17%-22%	25%-33%	12%-16%

36

Diagnoses for the spine and pelvis are defined in several major categories, based on the selective region. Categories include:

- Non-specific chronic, or chronic recurrent spine pain
- Intervertebral disk and motion segment pathology
  - Single and multiple levels
- Cervical and lumbar stenosis
- Spine fractures and/or dislocations
- Pelvic fractures and/or dislocations

In the event that a specific diagnosis is **not** included in the diagnosis based regional grid, the examiner should use a similar listed condition as a guide in determining an impairment value. Must fully explain rationale in report. – page 559

37

Diagnosis DETERMINES Class

- Selection of the optimal diagnosis requires judgment and experience. If more than one diagnosis can be used, the one that provides the most clinically accurate impairment rating is selected; this will generally be the more specific diagnosis. In cases where more than one diagnosis is applicable (eg, spinal stenosis and AOMSI), the CAUSALLY-RELATED diagnosis that provides the higher impairment rating should be used." – page 562

38

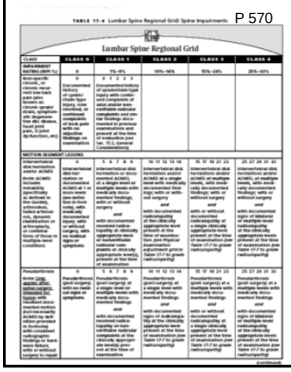
DIAGNOSIS: Surgery

- "Treatment may alter the functional status of the condition evaluated at MMI. For example. treatment of a disk herniation for symptomatic radiculopathy can move the impairment rating from a higher class to a lower class if the radiculopathy is resolved. However, if a condition has been treated surgically, this does **not** result in an "add on" value or additional distinct impairment percentage; changes related to surgical intervention are reflected in the provided ranges for impairment values. – page 562

39

Errata Changes ALL the tables

P 570


Lumbar Spine Regional Grid


Page 570, Table 17-4 Lumbar Spine Regional Grid: Spine Impairments

Case #1: Low Back Strain, Resolved AMA Guides, 5th Edition Rating

- Dx "Low back strain, resolved.
- Class 1, Zero impairment

Page 570, Table 17-4 Lumbar Spine Regional Grid: Spine Impairments

SOFT TISSUE AND NON-SPECIFIC CONDITIONS						
Non-specific chronic, or chronic recurrent low back pain (also known as: chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, SI joint dysfunction, etc)	0 Documented history of sprain/strain-type injury, now **resolved, or occasional complaints of back pain with no objective findings** on examination	0 1 2 3 3 Documented history of sprain/strain type injury with continued complaints of **axial and/or non-verifiable radicular complaints** and similar findings on multiple occasions (see Sec. 17.2, General Considerations)				

New Concept: Chronic Axial pain **CAN** Now be Rated

- Class 1: 0-3% WPI [0,1,2,3,3]
- The percentage impairment within that range depends on functional assessment, since there are no reliable physical examination or imaging findings in this group.
- [This means do use Physical Exam or Clinical Studies as adjustment factors, use only functional history.]

42

CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RATING (WPI %)	0	1%–9%	10%–14%	15%–24%	25%–33%
Non-specific chronic, or chronic recurrent low back pain (also known as: chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, SI joint dysfunction, etc) P 570	0 Documented history of sprain/strain-type injury, now **resolved, or continued complaints of back pain with no objective findings** on examination	0 1 2 3 3 Documented history of sprain/strain type injury with continued complaints of **axial and/or non-verifiable radicular complaints** and similar findings documented in previous examinations and present at the time of evaluation (see Sec. 17.2, General Considerations)	These patients have no objective findings and, therefore, are often given a diagnosis of "chronic sprain/strain" or "nonspecific" back or neck pain. The current methodology allows these patients to be rated in impairment class 1, with a range of impairment ratings from 1 to 3% whole person impairment (WPI).		

Page 570, Table 17-4 Lumbar Spine Regional Grid: Spine Impairments ERRATA

SOFT TISSUE AND NON-SPECIFIC CONDITIONS					
Non-specific chronic, or chronic recurrent low back pain (also known as: chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, SI joint dysfunction, etc)	0 Documented history of sprain/strain-type injury, now **resolved, or occasional complaints of back pain with no objective findings** on examination	0 1 2 3 3 Documented history of sprain/strain type injury with continued complaints of **axial and/or non-verifiable radicular complaints** and similar findings on multiple occasions (see Sec. 17.2, General Considerations)	The percentage impairment within that range depends on functional assessment, since there are no reliable physical examination or imaging findings in this group. Page 563		

Case 2: Cervical Strain with Residual

- Ms B is a 35 year old seat belt restrained driver who was "rear-ended" while stopped.
- She did not lose consciousness.
- She had posterior neck pain develop before leaving the scene of the accident.
- She developed **pain and numbness** down the arm to her right thumb and index finger.
- Physical exam initially showed decreased neck motion, deviation of the head/neck to the right during flexion, tenderness, but no neurologic deficit.
- Imaging: Normal X-rays (mild C5-6 disc space narrowing).
  - MRI: Decreased disc height and loss of signal at C5-6

45

Case 2: Cervical Strain with Residual

- 1 year later, after:
  - Multiple chiropractic adjustments
  - Multiple sessions with a massage therapist
  - Multiple sessions with a physical therapist
- Constant posterior neck pain
- Intermittent but daily occipital headache
- Twice weekly pain down the arm to the thumb and index finger
- Not willing to see a spine surgeon.

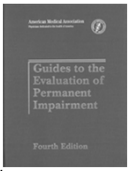
46

Case 2: Cervical Strain with Residual

- **1 year later**:
  - Normal neurologic exam (sensation, strength, reflexes, and no atrophy)
  - Cervical range of motion with inclinometers:
    - Flexion 30°, extension 40°, left bending 30°, right bending 15°, left rotation 60°, right rotation 40°.
  - No instability on Flexion-Extension lateral x-rays.
  - PDQ = 80

47

Case 2: Cervical Strain with Residual AMA Guides, 4th Edition



- DRE Category II
- **5% WPI**
- Base on either:
  - Non-Uniform Range of Motion
  - Non-Verifiable Radicular Complaints

48

Case #2: Cervical strain with residual AMA Guides, 4th Edition Rating

1. Guarding
Paravertebral muscle guarding or spasm or nonuniform loss of range of motion, dysmetria, is present or has been documented by a physician. Radicular complaints that follow anatomic pathways but cannot be verified by neurologic findings belong with this type of differentiator.

Page 109

DRE Cervicothoracic Category II: Minor Impairment

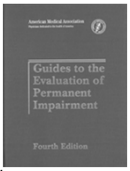
Description and Verification: The history and findings are compatible with a specific injury and include intermittent or continuous muscle guarding observed by a physician, nonuniform loss of range of motion (dysmetria, differentiator 1, Table 71, p. 109), or nonverifiable radicular complaints. There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

Page 104

5% WPI

Case 2: Cervical Strain with Residual AMA Guides, 4th Edition

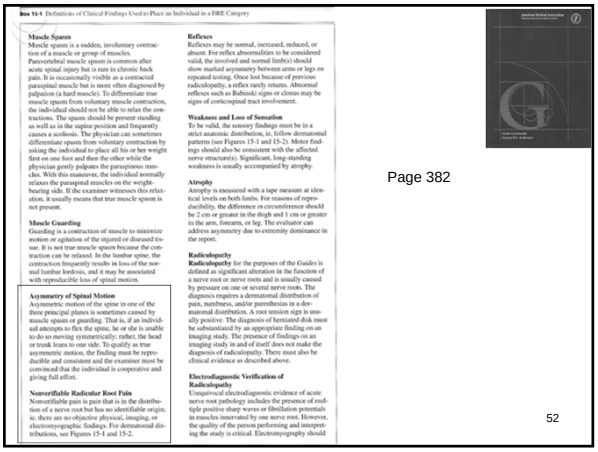
- DRE Category II
- **5% WPI**
- Base on either:
  - Non-Uniform Range of Motion
  - Non-Verifiable Radicular Complaints



50

Case 2: Cervical Strain with Residual AMA Guides, 5th Edition

- DRE Category II
- **5 – 8 % WPI**
- Based on either:
  - Non-Uniform Range of Motion
  - Non-Verifiable Radicular Complaints



Box 15-1 Definitions of Clinical Findings Used to Place an Individual in a DRE Category

Muscle Spasm
Muscle spasm is a sudden, involuntary contraction of a muscle or group of muscles. Paravertebral muscle spasm is common after acute spinal injury but is rare in chronic back pain. It is occasionally visible as a contracted paraspinal muscle but is more often diagnosed by palpation (a hard muscle). 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 and frequently causes a scoliosis. The physician can sometimes differentiate spasm from voluntary contraction by asking the individual to place all his or her weight first on one foot and then the other while the physician gently palpates the paraspinous muscles. With this maneuver, the individual normally relaxes the paraspinal muscles on the weight-bearing side. If the examiner witnesses this relaxation, it usually means that true muscle spasm is not present.

Muscle Guarding
Guarding is a contraction of muscle to minimize motion or agitation of the injured or diseased tissue. It is not true muscle spasm because the contraction can be released. In the lumbar spine, the contraction frequently results in loss of the normal lumbar lordosis, and it may be associated with reproducible loss of spinal motion.

Asymmetry of Spinal Motion
Asymmetric motion of the spine in one of the three principal planes is sometimes caused by muscle spasm or guarding. That is, if an individual attempts to flex the spine, he or she is unable to do so moving symmetrically; rather, the head or trunk leans to one side. To qualify as true asymmetric motion, the finding must be reproducible and consistent and the examiner must be convinced that the individual is cooperative and giving full effort.

Nonverifiable Radicular Root Pain
Nonverifiable pain is pain that is in the distribution of a nerve root but has no identifiable origin; ie, there are no objective physical, imaging, or electromyographic findings. For dermatomal distributions, see Figures 15-1 and 15-2.

Reflexes
Reflexes may be normal, increased, reduced, or absent. For reflex abnormalities to be considered valid, the involved and normal limb(s) should show marked asymmetry between arms or legs on repeated testing. Once lost because of previous radiculopathy, a reflex rarely returns. Abnormal reflexes such as Babinski signs or clonus may be signs of corticospinal tract involvement.

Weakness and Loss of Sensation
To be valid, the sensory findings must be in a strict anatomic distribution, ie, follow dermatomal patterns (see Figures 15-1 and 15-2). Motor findings should also be consistent with the affected nerve structure(s). Significant, long-standing weakness is usually accompanied by atrophy.

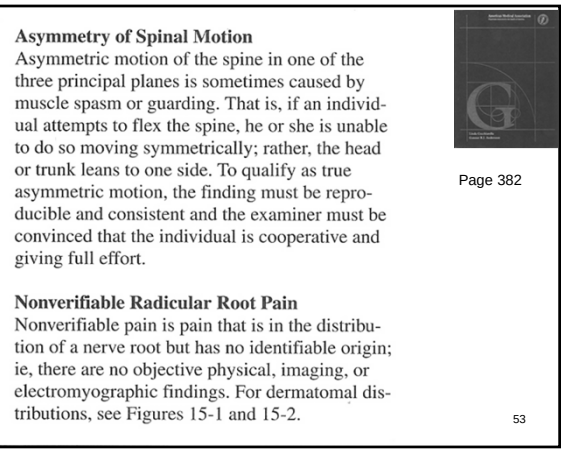
Atrophy
Atrophy is measured with a tape measure at identical levels on both limbs. For reasons of reproducibility, the difference in circumference should be 2 cm or greater in the thigh and 1 cm or greater in the arm, forearm, or leg. The evaluator can address asymmetry due to extremity dominance in the report.

Radiculopathy
Radiculopathy for the purposes of the *Guides* is defined as significant alteration in the function of a nerve root or nerve roots and is usually caused by pressure on one or several nerve roots. The diagnosis requires a dermatomal distribution of pain, numbness, and/or paresthesias in a dermatomal distribution. A root tension sign is usually positive. The diagnosis of herniated disk must be substantiated by an appropriate finding on an imaging study. The presence of findings on an imaging study in and of itself does not make the diagnosis of radiculopathy. There must also be clinical evidence as described above.

Electrodiagnostic Verification of Radiculopathy
Unequivocal electrodiagnostic evidence of acute nerve root pathology includes the presence of multiple positive sharp waves or fibrillation potentials in muscles innervated by one nerve root. However, the quality of the person performing and interpreting the study is critical. Electromyography should

Page 382

52



Asymmetry of Spinal Motion
Asymmetric motion of the spine in one of the three principal planes is sometimes caused by muscle spasm or guarding. That is, if an individual attempts to flex the spine, he or she is unable to do so moving symmetrically; rather, the head or trunk leans to one side. To qualify as true asymmetric motion, the finding must be reproducible and consistent and the examiner must be convinced that the individual is cooperative and giving full effort.

Nonverifiable Radicular Root Pain
Nonverifiable pain is pain that is in the distribution of a nerve root but has no identifiable origin; ie, there are no objective physical, imaging, or electromyographic findings. For dermatomal distributions, see Figures 15-1 and 15-2.

Page 382

53

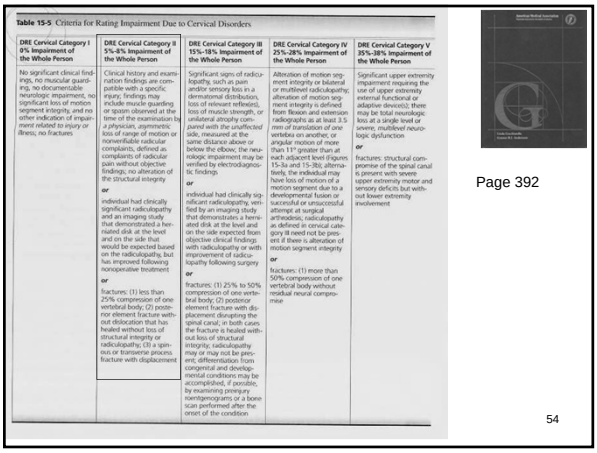


Table 15-5 Criteria for Rating Impairment Due to Cervical Disorders

DRE Cervical Category I 0% Impairment of the Whole Person	DRE Cervical Category II 5%-8% Impairment of the Whole Person	DRE Cervical Category III 15%-18% Impairment of the Whole Person	DRE Cervical Category IV 25%-28% Impairment of the Whole Person	DRE Cervical Category V 35%-38% Impairment of the Whole Person
No significant clinical findings, no muscular guarding, no documentable neurologic impairment, no significant loss of motion segment integrity, and no other indication of impairment related to injury or illness; no fractures	Clinical history and examination findings are compatible with a specific injury; findings may include muscle guarding or spasm observed at the time of the examination by a physician, asymmetric loss of range of motion or nonverifiable radicular complaints, defined as complaints of radicular pain without objective findings; no alteration of the structural integrity **or** individual had clinically significant radiculopathy and an imaging study that demonstrated a herniated disk at the level and on the side that would be expected based on the radiculopathy, but has improved following nonoperative treatment **or** fractures: (1) less than 25% compression of one vertebral body; (2) posterior element fracture without dislocation that has healed without loss of structural integrity or radiculopathy; (3) a spinous or transverse process fracture with displacement	Significant signs of radiculopathy, such as pain and/or sensory loss in a dermatomal distribution, loss of relevant reflex(es), loss of muscle strength, or unilateral atrophy compared with the unaffected side, measured at the same distance above or below the elbow; the neurologic impairment may be verified by electrodiagnostic findings **or** individual had clinically significant radiculopathy, verified by an imaging study that demonstrates a herniated disk at the level and on the side expected from objective clinical findings with radiculopathy or with improvement of radiculopathy following surgery **or** fractures: (1) 25% to 50% compression of one vertebral body; (2) posterior element fracture with displacement disrupting the spinal canal, in both cases the fracture is healed without loss of structural integrity; radiculopathy may or may not be present; differentiation from congenital and developmental conditions may be accomplished, if possible, by examining prerepair roentgenograms or a bone scan performed after the onset of the condition	Alteration of motion segment integrity or bilateral or multilevel radiculopathy; alteration of motion segment integrity is defined from flexion and extension radiographs as at least 3.5 mm of translation of one vertebra on another, or angular motion of more than 11° greater than at each adjacent level (figures 15-3a and 15-3b); alternatively, the individual may have loss of motion of a motion segment due to a developmental fusion or successful or unsuccessful attempt at surgical arthrodesis; radiculopathy as defined in cervical category III need not be present if there is alteration of motion segment integrity **or** fractures: (1) more than 50% compression of one vertebral body without residual neural compromise	Significant upper extremity impairment requiring the use of upper extremity external functional or adaptive device(s); there may be total neurologic loss at a single level or severe, multilevel neurologic dysfunction **or** fractures: structural compromise of the spinal canal is present with severe upper extremity motor and sensory deficits but without lower extremity involvement

Page 392

54

Table 15-5 Criteria for Rating Impairment Due to

DRE Cervical Category I 0% Impairment of the Whole Person	DRE Cervical Category II 5%-8% Impairment of the Whole Person
No significant clinical findings, no muscular guarding, no documentable neurologic impairment, no significant loss of motion segment integrity, and no other indication of impairment related to injury or illness; no fractures	Clinical history and examination findings are compatible with a specific injury; findings may include muscle guarding or spasm observed at the time of the examination by a physician, asymmetric loss of range of motion or nonverifiable radicular complaints, defined as complaints of radicular pain without objective findings; no alteration of the structural integrity *or* individual had clinically significant radiculopathy and an imaging study that demonstrated a herniated disk at the level and on the side that would be expected based on the radiculopathy, but has improved following nonoperative treatment *or* fractures: (1) less than 25% compression of one vertebral body; (2) posterior element fracture without dislocation that has healed without loss of structural integrity or radiculopathy; (3) a spinous or transverse process fracture with displacement

Page 392

Physician chooses
5%, or 6%, or 7%, or 8%

Based on severity of symptoms
And ADL interference

DRE Cervical Category II
5%-8% Impairment of the Whole Person Page 393

Clinical history and examination findings are compatible with a specific injury; findings may include muscle guarding or spasm observed at the time of the examination by a physician, asymmetric loss of range of motion or nonverifiable radicular complaints, defined as complaints of radicular pain without objective findings; no alteration of the structural integrity

or

individual had clinically significant radiculopathy and an imaging study that demonstrated a herniated disk at the level and on the side that would be expected based on the radiculopathy, but has improved following nonoperative treatment

or

fractures: (1) less than 25% compression of one vertebral body; (2) posterior element fracture without dislocation that has healed without loss of structural integrity or radiculopathy; (3) a spinous or transverse process fracture with displacement

Case 2: Cervical Strain with Residual AMA Guides, 6th Edition

- In the AMA Guides 6th Edition,
  - The concept of **non-verifiable radicular pain is retained.**
  - **Range of Motion is no longer assessed.**
    - NOT part of the spine physical exam.
  - Symptoms (Functional History) can be assessed with the PDQ (Pain Disability Questionnaire).

56

TABLE 17-7
Physical Examination Adjustment: Spine

Physical Examination Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Lumbar Neural Tension Signs	Negative straight leg raising test for radicular pain or invalid examination		Positive straight leg raising test, with reproducible radicular pain at 35°–70°		
Cervical Compression/ Foraminal Compression	Negative cervical compression/ foraminal compression		Positive cervical compression/foraminal compression (Spurling's test) with reproducible radicular pain		
Reflexes	Normal and symmetrical		New and asymmetrical abnormality consistent with other radicular findings (ie, differentiate between old and new changes)		
Atrophy UE LE	<1 cm <1 cm	1.0–1.9 cm 1.0–1.9 cm	2.0–2.9 cm 2.0–2.9 cm	3.0–3.5 cm 3.0–3.5 cm	>3.5 cm >3.5 cm
Sensory Deficit	No loss of sensibility, abnormal sensation, or pain	Diminished light touch (with or without minimal abnormal sensations or pain) in a clinically appropriate distribution, that is forgotten during activity	Diminished light touch (with some abnormal sensations or slight pain) in a clinically appropriate distribution, that interferes with some activities	Decreased protective sensibility (with abnormal sensations or moderate pain in a clinically appropriate distribution) that may prevent some activities	Absent superficial pain and tactile sensibility or absent protective sensibility (abnormal sensations, or severe pain) that prevents all activity
Motor Strength	Normal Active movement against gravity with full resistance (5/5)	Active movement against gravity and some resistance (4/5)	Active movement against gravity only, without resistance (3/5)	Active movement with gravity eliminated (2/5)	Slight contraction and no movement or no contraction (0–1/5)

The highest grade modifier identified in each adjustment grid is chosen for use in the net adjustment calculation.

P 572

New Concept: Chronic Axial pain **CAN** Now be Rated

- Class 1: 0-3% WPI [0,1,2,3,3]
- The percentage impairment within that range depends on functional assessment, since there are no reliable physical examination or imaging findings in this group.
- [This means do use Physical Exam or Clinical Studies as adjustment factors, use only functional history.]

58

Case 2: Cervical strain with residual

Chapter 17

Page 564, TABLE 17-2, Cervical Spine Regional Grid: Spine Impairments

CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3
IMPAIRMENT RATING (WPI %)	0	1%–8%	9%–14%	15%–24%
SOFT TISSUE AND NON- SPECIFIC CONDITIONS				
Non-specific chronic, or chronic recurrent neck pain (also known as chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, chronic whiplash, etc)	0 Documented history of sprain/strain-type injury, now **resolved**, or occasional **complaints of neck pain with no objective findings** on examination	1 1 2 3 3 Documented history of sprain/strain-type injury with continued complaints of **axial and/or nonverifiable radicular complaints; similar findings documented on multiple occasions** (see Section 17.2 General Considerations)		

New 6th Edition Category Spinal pain WITHOUT Objective Findings

- These patients have no objective findings and, therefore, are often given a diagnosis of "chronic sprain/strain" or "nonspecific" back or neck pain. The current methodology allows these patients to be rated in impairment class 1, with a range of impairment ratings from 1 to 3% whole person impairment (WPI).
- The percentage impairment within that range depends on **functional assessment**, since there are no reliable physical examination or imaging findings in this group.
  - Page 563

60

Page 563

The patient who is rated in this impairment class (IC 1) and then presents with another episode that results in placement in this same impairment class (IC 1) may move up or down a grade within the class with each successive assessment at MMI. However, this patient would **not** be entitled to an accumulation of 1% or 2% WPI ratings, or placement in a different class, unless the diagnosis changed.

For Example: Jump to Radiculopathy row if diagnosis changes

61

Page 563

That is, the patient might, after a second injury, move from grade B to grade C within IC 1, but successive evaluations of 1% or 2% WPI would not be added to increase the impairment beyond the maximum impairment assigned for grade E in that diagnostic impairment class. Thus, a person with a grade B or 1% impairment who sustains a similar, subsequent injury that is rated as grade D or 3% WPI would then have a 3% WPI.

62

Page 563

In states where apportionment is appropriate, 1% impairment would have preexisted the new injury and 2% would be related to the new injury.

A person who has a grade C or 2% WPI who sustains a new injury, and still falls in grade A, B, or C, still has a 2% WPI, meaning there is no new impairment (0%) for the new injury.

63

Case 2: Cervical strain with residual

Chapter 17

Page 564, TABLE 17-2, Cervical Spine Regional Grid: Spine Impairments

CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3
IMPAIRMENT RATING (WPI %)	0	1%–8%	9%–14%	15%–24%
SOFT TISSUE AND NON- SPECIFIC CONDITIONS				
Non-specific chronic, or chronic recurrent neck pain (also known as chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, chronic whiplash, etc)	0 Documented history of sprain/strain-type injury, now **resolved**, or occasional **complaints of neck pain with no objective findings** on examination	1 1 2 3 3 Documented history of sprain/strain-type injury with continued complaints of **axial and/or non-verifiable radicular complaints; similar findings documented on multiple occasions** (see Section 17.2 General Considerations)		

Non-Verifiable Radicular Complaints p 576

Nonverifiable Radicular Complaints:
Nonverifiable radicular complaints are defined as chronic persisting limb pain or numbness, which is consistently and repetitively recognized in medical records, in the distribution of a single nerve root that the **examiner can name** and with the following characteristics:

preserved sharp vs. dull sensation and preserved muscle strength in the muscles it innervates, is not significantly compressed on imaging, and is not affected on electrodiagnostic studies (if performed).

65

Non-Verifiable Radicular Complaints p 576

Nonverifiable Radicular Complaints:

Although there are subjective complaints of a specific radicular nature, there are inadequate or **no** objective findings to support the diagnosis of radiculopathy.

66

Radiculopathy Definition: "Hidden" in PE section. Page 576

Subjective reports of sensory changes are more difficult to assess; therefore, these complaints should be consistent and supported by **other** findings of radiculopathy.

["**It feels odd when you touch me there"**, but perceives all stimuli IS **NOT necessarily** radiculopathy.]

There **may be** associated motor weakness and loss of reflex. A root tension sign is usually positive. [NOT "MUST be"]

67

More Rules on Diagnosis: p 563

Common conditions related to degenerative changes in the spine, including abnormalities identified on imaging studies such as annular tears, facet arthropathy, and disk degeneration, do not correlate well with symptoms, clinical findings, or causation analysis and are **not** ratable according to the *Guides*.

68

Errata ADDS footnote to page 571

- Note: The following applies to the cervical, thoracic, and lumbar spine grids: 1) Intervertebral disk herniation **excludes** annular bulge, annular tear and **disk herniation on imaging without consistent objective findings of radiculopathy** at the appropriate level(s) when most symptomatic.

69

More Rules on Diagnosis: p 563

Congenital anomalies such as spina bifida occulta, abnormal segmentation and conjoined nerve roots are not ratable as impairments. Developmental anomalies, including spondylolysis, some forms of spondylolisthesis, kyphosis and excessive lordosis or scoliosis are also **not** ratable.

There may be exceptions to these rules in some jurisdictions, related to aggravation of preexisting conditions.

70

Now that Diagnosis has established the Class

- Adjust the impairment from the "default" or grade C value by considering:
  - Functional History
  - ~~Physical Exam~~
  - ~~Clinical Studies~~

For "Non-specific axial pain the only adjustment is Functional History

71

Non-Key Factors

- Functional History
  - Proper FH enables physician to determine the impact of a given spine-or-pelvis-related condition on basic function and activities as they pertain to ADLs
- Functional assessment tool **may** be used, example is Pain Disabilities Questionnaire (PDQ) is included in appendix.
- Physician is expected to weigh the patient's subjective complaints and score on the functional assessment tool, relative to the expected severity for the condition.
- The grade modifier that reflects functional assessment **may or may not be accepted** as a variable in the impairment calculation.

72

Functional History: Spine

- Concept: adjusting the whole person impairment for function in **both** the cervical and the lumbar spine **double rates** the functional history
- Functional History grade modifier should be applied **only** to the single, highest spine-related DBI if multiple regions are being rated. Specific jurisdictions may modify this process such that Functional History adjustment is considered for each DBI or not considered at all as a grade modifier." - page 569

73

Functional History Modifiers

- What is **normal** activity ?? [NOT defined]
- Minor constant leg numbness could be grade 4 ("symptoms at rest"), or grade 1 ("no interference with normal activity")

TABLE 17-6
Functional History Adjustment: Spine

Functional History Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Activity	Asymptomatic; problem resolved; inconsistent symptoms	Pain; symptoms with strenuous/ vigorous activity	Pain; symptoms with normal activity	Pain; symptoms with less-than-normal activity (minimal activity)	Pain; symptoms at rest, limited to sedentary activity
PDQ or alternative validated functional assessment, scaled appropriately	No disability 0	Mild disability 0–70	Moderate disability 71–100	Severe disability 101–130	Extreme disability 131–150

Note: PDQ indicates Pain Disabilities Questionnaire.

Functional Adjustment: Spine

- "… and those with constant symptoms accompanied by functional deficits (severity of functional deficit **NOT** specified) that persist despite treatment will be assigned grade 4 modifier." - page 569

75


Pain Disability Questionnaire

Patient Name _____ Date _____

Instructions: These questions ask your views about how your pain now affects how you function in everyday activities. Please answer every question and mark the ONE number on EACH scale that best describes how you feel.

1. Does your pain interfere with your normal work inside and outside the home?
(Work normally) ... (Unable to work at all)

2. Does your pain interfere with personal care (such as washing, dressing, etc.)?
(Take care of myself completely) ... (Need help with all my personal care)

3. Does your pain interfere with your traveling?
(Travel all you want) ... (Only travel to see doctors)

4. Does your pain affect your ability to sit or stand?
(No problems) ... (Cannot sit /stand at all)

5. Does your pain affect your ability to lift overhead, grasp objects, or reach for things?
(No problems) ... (Cannot do at all)

6. Does your pain affect your ability to lift objects off the floor, bend, stoop, or squat?
(No problems) ... (Cannot do at all)

7. Does your pain affect your ability to walk or run?
(No problems) ... (Cannot walk/run at all)

8. Has your income declined since your pain began?
(No decline) ... (Lost all income)

9. Do you have to take pain medication every day to control your pain?
(No medication needed) ... (On pain medication throughout the day)

10. Does your pain force you to see doctors much more often than before your pain began?
(Never see doctors) ... (See doctors weekly)

11. Does your pain interfere with your ability to see the people who are important to you as much as you would like?
(No problem) ... (Never see them)

12. Does your pain interfere with recreational activities and hobbies that are important to you?
(No interference) ... (Total interference)

13. Do you need the help of your family and friends to complete everyday tasks (including both work outside the home and housework) because of your pain?
(Never need help) ... (Need help all the time)

14. Do you now feel more depressed, tense, or anxious than before your pain began?
(No depression/tension) ... (Severe depression / tension)

15. Are there emotional problems caused by your pain that interfere with your family, social and or work activities?
(No problems) ... (Severe problems)

Examiner _____

PDQ
Integer version

- **In the ERRATA.**
- Also used in Chapter 3: Pain.

76

Functional History

- Example 2: PDQ = 80 points
- Grade 2 Functional History Modifier

TABLE 17-6
Functional History Adjustment: Spine

Functional History Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Activity	Asymptomatic; problem resolved; inconsistent symptoms	Pain; symptoms with strenuous/ vigorous activity	Pain; symptoms with normal activity	Pain; symptoms with less-than-normal activity (minimal activity)	Pain; symptoms at rest, limited to sedentary activity
PDQ or alternative validated functional assessment, scaled appropriately	No disability 0	Mild disability 0–70	Moderate disability 71–100	Severe disability 101–130	Extreme disability 131–150

Note: PDQ indicates Pain Disabilities Questionnaire.

77

Case 2, Cervical Strain with Residual
AMA Guides, 6th Edition

- Net Adjustment = GMFH – CDX
- NA = 2 – 1 = +1
- Thus, Final rating is Class 1, Grade D, or 3% WPI

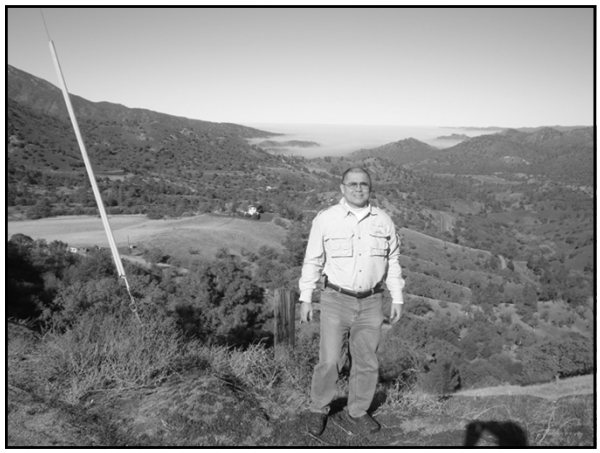
78

Case 2: Cervical strain with residual

Chapter 17

Page 564, TABLE 17-2, Cervical Spine Regional Grid: Spine Impairments

CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3
IMPAIRMENT RATING (WPI %)	0	1%–8%	9%–14%	15%–24%
SOFT TISSUE AND NON- SPECIFIC CONDITIONS				
Non-specific chronic, or chronic recurrent neck pain (also known as chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, chronic whiplash, etc)	0 Documented history of sprain/strain-type injury, now **resolved, or occasional complaints of neck pain with no objective findings** on examination	1 1 2 3 3 Documented history of sprain/strain-type injury with continued complaints of **axial and/or non-verifiable radicular complaints; similar findings documented on multiple occasions** (see Section 17.2 General Considerations)		



Case 3, Lumbar Radiculopathy

- Mr. C is a 40 year old who slips and falls at work and lands on his buttocks with immediate low back and left leg pain.
- He does not improve with time.
- He complains of pain and numbness in the left leg that goes all the way to the great toe.
- His pain worsens with activity.
- **MRI shows a 8 mm left sided HNP at L4-5.**
- 6 weeks after injury has
  - a **L4-5 left microdiscectomy.**

81

Case 3, Lumbar Radiculopathy

- On exam:
  - Straight leg raising increases his left leg pain at 30° of elevation of the left leg, and at 40° of elevation of the right leg (positive crossed straight leg raising).
  - Retained sharp versus dull perception in the 1st dorsal web space (L5 dermatome area).
    - Subjective paresthesias in L5 dermatome
  - Grade 4+/5 strength in the Anterior Tibial muscle (mild foot drop gait). Does **not** have an AFO.
  - 2 cm of left leg atrophy, 0.5 cm of thigh atrophy.

82

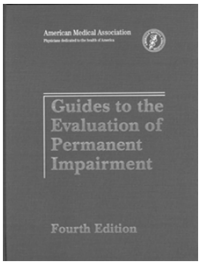
Case 3, Lumbar Radiculopathy

- No electrodiagnostic studies done.
- No post-op MRI done.
- Finished work conditioning and returned to work despite frequent low back and left leg pain to the foot (great toe).
  - Symptoms develop with **normal** activity, and especially at work.
- Taking naproxen and gabapentin.
  - No medication side effects
- PDQ = 65

83

Case 3: Lumbar Radiculopathy AMA Guides, 4th Edition

- DRE Category III
- **10% WPI**
- Based on presence of acute radiculopathy



84

Case 3: Lumbar Radiculopathy

Table 72. DRE Lumbosacral Spine Impairment Categories.

DRE impairment category	Description	% Impairment of the whole person
I	Complaints or symptoms	0
II	Minor impairment: clinical signs of lumbar injury are present without radiculopathy or loss of motion segment integrity	5
III	Radiculopathy: evidence of radiculopathy is present	10
IV	Loss of motion segment integrity: criteria for this condition are described in Section 3.3b, p. 95	20
V	Radiculopathy and loss of motion segment integrity	25
VI	Cauda equina-like syndrome *without* bowel or bladder impairment	40
VII	Cauda equina syndrome *with* bowel or bladder impairment	60
VIII	Paraplegia	75

- Page 110

85

Case 3: Lumbar Radiculopathy

- Page 102

DRE Lumbosacral Category III: Radiculopathy

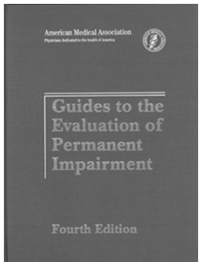
Description and Verification: The patient has significant signs of radiculopathy, such as loss of relevant reflex(es), or measured unilateral atrophy of greater than 2 cm above or below the knee, compared to measurements on the contralateral side at the same location. The impairment may be verified by electrodiagnostic findings. See Table 71, p. 109, differentiators 2, 3, and 4.

10 % WPI

86

Case 3: Lumbar Radiculopathy AMA Guides, 4th Edition

- DRE Category III
- **10% WPI**
- REGARDLESS
  - "Good" result with minor Residual symptoms
  - "Bad" result with constant Severe pain



87

Case 3: Lumbar Radiculopathy AMA Guides, 5th Edition

- DRE Category III
- **10 - 13 % WPI**
- Based on True Radiculopathy

Table 15-3 Criteria for Rating Impairment Due to Lumbar Spine Injury

DRE Lumbar Category I 0% Impairment of the Whole Person	DRE Lumbar Category II 5%–8% Impairment of the Whole Person	DRE Lumbar Category III 10%–13% Impairment of the Whole Person	DRE Lumbar Category IV 20%–23% Impairment of the Whole Person	DRE Lumbar Category V 25%–28% Impairment of the Whole Person
No significant clinical findings, no observed muscle guarding or spasm, no documentable neurologic impairment, no documented alteration in structural integrity, and no other indication of impairment related to injury or illness; no fractures	Clinical history and examination findings are compatible with a specific injury; findings may include significant muscle guarding or spasm observed at the time of the examination, asymmetric loss of range of motion, or nonverifiable radicular complaints, defined as complaints of radicular pain without objective findings; no alteration of the structural integrity and no significant radiculopathy **or** individual had a clinically significant radiculopathy and has an imaging study that demonstrates a herniated disk at the level and on the side that would be expected based on the previous radiculopathy, but no longer has the radiculopathy following conservative treatment **or** fractures: (1) less than 25% compression of one vertebral body; (2) posterior element fracture without dislocation (not developmental spondylolysis) that has healed without alteration of motion segment integrity; (3) a spinous or transverse process fracture with displacement without a vertebral body fracture, which does not disrupt the spinal canal	Significant signs of radiculopathy, such as dermatomal pain and/or in a dermatomal distribution, sensory loss, loss of relevant reflex(es), loss of muscle strength or measured unilateral atrophy above or below the knee compared to measurements on the contralateral side at the same location; impairment may be verified by electrodiagnostic findings **or** history of a herniated disk at the level and on the side that would be expected from objective clinical findings, associated with radiculopathy, or individuals who had surgery for radiculopathy but are now asymptomatic **or** fractures: (1) 25% to 50% compression of one vertebral body; (2) posterior element fracture with displacement disrupting the spinal canal; in both cases, the fracture has healed without alteration of structural integrity	Loss of motion segment integrity defined from flexion and extension radiographs as at least 4.5 mm of translation of one vertebra on another or angular motion greater than 15° at L1-2, L2-3, and L3-4, greater than 20° at L4-5, and greater than 25° at L5-S1 (Figure 15-3), may have complete or near complete loss of motion of a motion segment due to developmental fusion, or successful or unsuccessful attempt at surgical arthrodesis **or** fractures: (1) greater than 50% compression of one vertebral body without residual neurologic compromise	Meets the criteria of DRE lumbosacral categories III and IV; that is, both radiculopathy and alteration of motion segment integrity are present; significant lower extremity impairment is present as indicated by atrophy or loss of reflex(es), pain, and/or sensory changes within an anatomic distribution (dermatomal), or electromyographic findings as stated in lumbosacral category III and alteration of spine motion segment integrity as defined in lumbosacral category IV **or** fractures: (1) greater than 50% compression of one vertebral body with unilateral neurologic compromise

Page 384

Case 3, Lumbar Radiculopathy

DRE Lumbar Category III
10%-13% Impairment of the Whole Person Page 386

Significant signs of radiculopathy, such as dermatomal pain and/or in a dermatomal distribution, sensory loss, loss of relevant reflex(es), loss of muscle strength or measured unilateral atrophy above or below the knee compared to measurements on the contralateral side at the same location; impairment may be verified by electrodiagnostic findings

or

history of a herniated disk at the level and on the side that would be expected from objective clinical findings, associated with radiculopathy, or individuals who had surgery for radiculopathy but are now asymptomatic

or

fractures: (1) 25% to 50% compression of one vertebral body; (2) posterior element fracture with displacement disrupting the spinal canal; in both cases, the fracture has healed without alteration of structural integrity

90

Case 3: Lumbar Radiculopathy
AMA Guides, 5th Edition

- DRE Category III
- **10 - 13 % WPI**
- Based on True Radiculopathy
- Asymptomatic, with resolved radiculopathy, gets the minimum or 10% WPI rating.
- Mr. C thus deserves 12% or 13%.

91

Case 3: Lumbar Radiculopathy
AMA Guides, 6th Edition

- Very Similar to Example 17-13: Class 2 p 589-590
- Left L4-5 disc herniation with residual radiculopathy.

92

Key Point:
Residual ONE level radiculopathy

- Dorsiflexion weakness and leg pain.

MOTION SEGMENT LESIONS					
Intervertebral disk herniation and/or AOMSI[a] *Note:* AOMSI includes instability (specifically as defined in the *Guides*), arthrodesis, failed arthrodesis, dynamic stabilization or arthroplasty, or combinations of those in multiple-level conditions Errata	0 Imaging findings of intervertebral disk herniation without a history of clinically correlating radicular symptoms	5 6 7 8 9 Intervertebral disk herniation(s) or documented AOMSI, at a **single level or multiple levels** with medically documented findings; with or without surgery *and* with documented **resolved radiculopathy at clinically appropriate level(s) or nonverifiable radicular complaints** at clinically appropriate level(s), present at the time of examination[a]	10 11 12 13 14 Intervertebral disk herniation ~~and~~/or AOMSI **at a single level** with medically documented findings; with or without surgery *and* with documented residual ~~radicul-~~**opathy at the clinically appropriate level** present at the time of examination *(see Physical Examination adjustment grid in Table 17-7 to grade radiculopathy)*	15 17 19 21 23 Intervertebral disk herniations ~~and~~/or AOMSI **at multiple levels**, with medically documented findings; with or without surgery *and* with ~~or without~~ documented residual **radiculopathy at a single clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	25 27 29 31 33 Intervertebral disk herniations and/or AOMSI, **at multiple levels**, with medically documented findings; with or without surgery *and* with documented signs of residual **bilateral or multiple-level radiculopathy at the clinically appropriate levels** present at the time of examination *(see Table 17-7 to grade radiculopathy)*

Example 17-13: Class 2 p 589-590

- Adjustment Grids:
  - Functional History: Grade modifier is 2 based on report of pain with normal activity.
  - Physical Exam: Grade modifier 2 for positive SLR, note that 4/5 strength would only be grade modifier 1.
  - Clinical Testing: Grade modifier 2 as well.
  - The net adjustment is 0,
  - **Impairment is grade 2, class C, which equals 12% WPI.**

94

Functional History

- PDQ = 65
- Grade 2

TABLE 17-6
Functional History Adjustment: Spine

Functional History Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Activity	Asymptomatic; problem resolved; inconsistent symptoms	Pain; symptoms with strenuous/ vigorous activity	Pain; symptoms with normal activity	Pain; symptoms with less-than-normal activity (minimal activity)	Pain; symptoms at rest, limited to sedentary activity
PDQ or alternative validated functional assessment, scaled appropriately	No disability 0	Mild disability 0–70	Moderate disability 71–100	Severe disability 101–130	Extreme disability 131–150

Note: PDQ indicates Pain Disabilities Questionnaire.

95

TABLE 17-7
Physical Examination Adjustment: Spine

Physical Examination Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Lumbar Neural Tension Signs	Negative straight leg raising test for radicular pain or invalid examination		Positive straight leg raising test, with reproducible radicular pain at 35°–70°		
Cervical Compression/ Foraminal Compression	Negative cervical compression/ foraminal compression		Positive cervical compression/foraminal compression (Spurling's test) with reproducible radicular pain		
Reflexes	Normal and symmetrical		New and asymmetrical abnormality consistent with other radicular findings (ie, differentiate between old and new changes)		
Atrophy UE LE	<1 cm <1 cm	1.0–1.9 cm 1.0–1.9 cm	2.0–2.9 cm 2.0–2.9 cm	3.0–3.5 cm 3.0–3.5 cm	>3.5 cm >3.5 cm
Sensory Deficit	No loss of sensibility, abnormal sensation, or pain	Diminished light touch (with or without minimal abnormal sensations or pain) in a clinically appropriate distribution, that is forgotten during activity	Diminished light touch (with some abnormal sensations or slight pain) in a clinically appropriate distribution, that interferes with some activities	Decreased protective sensibility (with abnormal sensations or moderate pain in a clinically appropriate distribution) that may prevent some activities	Absent superficial pain and tactile sensibility or absent protective sensibility (abnormal sensations, or severe pain) that prevents all activity
Motor Strength	Normal Active movement against gravity with full resistance (5/5)	Active movement against gravity and some resistance (4/5)	Active movement against gravity only, without resistance (3/5)	Active movement with gravity eliminated (2/5)	Slight contraction and no movement or no contraction (0–1/5)

The highest grade modifier identified in each adjustment grid is chosen for use in the net adjustment calculation.
P 572

Clinical Studies: Spine (page 581)

TABLE 17-9
Clinical Studies Adjustment: Spine

Clinical Studies Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Imaging studies: Radiographs, bone scan, MRI	Imaging findings do not support symptoms or structural diagnosis within normal limits *or* normal age-related changes *or* clinically insignificant degenerative changes, or findings on the side opposite clinical presentation	This leaves radiculopathy	CT/MRI/other imaging findings consistent with clinical presentation, including evidence of AOMSI with segmental instability, fusion, or motion preservation device defined by region (see row below)	UNLESS Surgical "Oops"	Imaging evidence of major surgical complications, including infection or major deformity
Electrodiagnostic testing	Normal		EMG evidence consistent with single nerve root radiculopathy		EMG evidence consistent with multiple nerve root radiculopathy

Note: CT indicates computed tomography; MRI, magnetic resonance imaging; AOMSI, alteration of motion segment integrity; and EMG, electromyographic.

Post-Op Study may Be Grade 0.

If a diagnosis of AOMSI, is made, imaging studies should be excluded as a grade modifier. P 563
ALSO includes *stenosis* pseudarthrosis, fracture, or spondylolisthesis.

Rules, Rules, Rules

- If a diagnosis of AOMSI, pseudarthrosis, fracture or spondylolisthesis is made, imaging studies should be excluded as a grade modifier. P 563 & 577
- Lists do not include Spinal Stenosis, but logically should, as imaging is just as key a criterion for diagnosis.

98

When do you use Imaging as a GRADE Modifier ??

Category	Use Imaging ?
Class 0, Every Diagnosis	No, to exclude diagnoses
Chronic Non-Specific Pain	No (FH is the only GM)
Disc Herniation	Yes (consistent or not)
AOMSI, Pseudarthrosis, Spinal Stenosis, Spondylolisthesis, Fracture, Dislocation	No, used in Class assignment.
Deep Spinal Infection	Perhaps, if not draining
Major surgical complications (Broken or displaced implant)	Yes

99

Example 17-13: Class 2 p 589-590

Class 2 Example Calculation

CDX	GMFH	GMPE	GMCS
2	2	2	2

Net adjustment

$$(GMFH - CDX)(2 - 2) = 0$$
$$+ (GMPE - CDX) + (2 - 2) = 0$$
$$+ (GMCS - CDX) + (2 - 2) = 0$$
$$\text{Net adjustment} = 0$$

Result is class 2 with an adjustment of 0; therefore, this impairment is class 2 default grade C, which equals 12% impairment

Note: CDX indicates class of diagnosis; GMFH, grade modifier for Functional History; GMPE, grade modifier for Physical Examination; and GMCS, grade modifier for Clinical Studies.

100

Key Point: Residual ONE level radiculopathy

- Dorsiflexion weakness and leg pain.

MOTION SEGMENT LESIONS

	0	5 6 7 8 9	10 11 12 13 14	15 17 19 21 23	25 27 29 33
Intervertebral disk herniation and/or AOMSI* *Note:* AOMSI includes instability (specifically as defined in the *Guides*), arthrodesis, failed arthrodesis, dynamic stabilization or arthroplasty, or combinations of those in multiple-level conditions	Imaging findings of intervertebral disk herniation without a history of clinically correlating radicular symptoms	Intervertebral disk herniation(s) or documented AOMSI, at a **single level or multiple levels** with medically documented findings; with or without surgery *and* with documented **resolved radiculopathy at clinically appropriate level(s) or nonverifiable radicular complaints** at clinically appropriate level(s), present at the time of examination*	Intervertebral disk herniation ~~and~~/or AOMSI **at a single level** with medically documented findings; with or without surgery *and* with documented **residual radiculopathy at the clinically appropriate level** present at the time of examination *(see Physical Examination adjustment grid in Table 17-7 to grade radiculopathy)*	Intervertebral disk herniations ~~and~~/or AOMSI **at multiple levels**, with medically documented findings; with or without surgery *and* with ~~or without~~ documented residual radiculopathy **at a single clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	Intervertebral disk herniations and/or AOMSI, **at multiple levels**, with medically documented findings; with or without surgery *and* with documented signs of residual bilateral or **multiple-level radiculopathy at the clinically appropriate levels** present at the time of examination *(see Table 17-7 to grade radiculopathy)*

Errata

Case 3: Lumbar Radiculopathy AMA Guides, 6th Edition

- Final Rating Class 2, Grade C, or 12 % WPI
- Left L4-5 disc herniation with residual radiculopathy.

102

Example 4: Lumbar Fusion
Non-specific Low Back Pain

- **Subject:** 52-year-old man.
- **History:** The patient had an onset of back pain and right thigh and calf pain after digging trenches to lay cable.
  - He was treated with physical therapy and medications, without resolution of symptoms.
  - MRI showed a bulging disc with an annular tear at L4-5
  - Flexion/extension X rays before surgery documented **NO** instability within the parameters described for AOMSI.
  - The patient was treated with a lumbar fusion at L4-5 one year prior to evaluation.

104

Example 4: Lumbar Fusion

- **Current Symptoms:** Reported some improvement in his back pain and no significant leg pain.
- **Functional History:** PDQ score of 120, consistent with severe disability. Pain with all ADLs, "prevents me from even sedentary work".
- **Physical Exam:** Decreased lumbar range of motion,
- Positive SLR test on the right at 30° as it **increases his low back pain**.
- Normal neurologic exam.

105

Example 4: Lumbar Fusion

- **Imaging:** Solid L4-5 fusion with intact pedicle screw construct, and all screws appear to be in the pedicles**.**
- **Medications:** Sustained release opioids at 200 mg morphine equivalent daily, with carisoprodol at bedtime.
  - **Denies any medication side effects.**

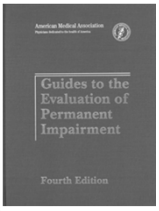
106

Table 72. DRE Lumbosacral Spine Impairment Categories.

DRE impairment category	Description	% Impairment of the whole person
I	Complaints or symptoms	0
II	Minor impairment: clinical signs of lumbar injury are present without radiculopathy or loss of motion segment integrity	5
III	Radiculopathy: evidence of radiculopathy is present	10
IV	Loss of motion segment integrity: criteria for this condition are described in Section 3.3b, p. 95	20
V	Radiculopathy and loss of motion segment integrity	25
VI	Cauda equina-like syndrome *without* bowel or bladder impairment	40
VII	Cauda equina syndrome *with* bowel or bladder impairment	60
VIII	Paraplegia	75

?

Same Case: Lumbar Fusion AMA Guides, 4th Edition



107

AMA Guides, 4th Edition
Criteria for Loss of Motion Segment Integrity are Radiographic

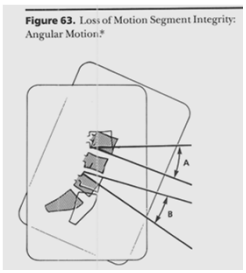
- Too much motion only (instability).

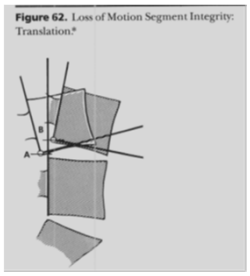
The loss of integrity is defined as an antero-posterior motion or slipping of one vertebra over another greater than 3.5 mm for a cervical vertebra or greater than 5 mm for a vertebra in the thoracic or lumbar spine (Fig. 62, at right); or a difference in the angular motion of two adjacent motion segments greater than 11° in response to spine flexion and extension (Fig. 63, at right). Motion of the spine segments is evaluated with flexion and extension

108

AMA Guides, 4th Edition Criteria for Loss of Motion Segment Integrity are Radiographic

- Too much motion only (instability).



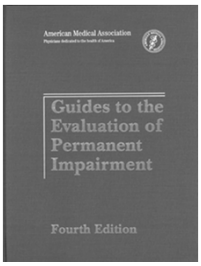


109

Case 4: Lumbar Fusion AMA Guides, 4th Edition

- DRE Category II
- **5% WPI**
- REGARDLESS
  - Of Lumbar Fusion

Differentiator is usual Physician imaged "spasm" or Guarding



110

Case 4: Lumbar Fusion AMA Guides, 5th Edition

- DRE Category IV
- **20 - 23 % WPI**
- Based on Fusion
  - Loss of Motion Segment Integrity

111

Case 4: Lumbar Fusion AMA Guides, 5th Edition

DRE Lumbar Category IV
20%-23% Impairment of the Whole Person

Loss of motion segment integrity defined from flexion and extension radiographs as at least 4.5 mm of translation of one vertebra on another or angular motion greater than 15° at L1-2, L2-3, and L3-4, greater than 20° at L4-5, and greater than 25° at L5-S1 (Figure 15-3); may have complete or near complete loss of motion of a motion segment due to developmental fusion, or successful or unsuccessful attempt at surgical arthrodesis

or

fractures: (1) greater than 50% compression of one vertebral body without residual neurologic compromise

112

DRE Lumbar Category IV 20%-23% Impairment of the Whole Person	DRE Lumbar Category V 25%-28% Impairment of the Whole Person
Loss of motion segment integrity defined from flexion and extension radiographs as at least 4.5 mm of translation of one vertebra on another or angular motion greater than 15° at L1-2, L2-3, and L3-4, greater than 20° at L4-5, and greater than 25° at L5-S1 (Figure 15-3); may have complete or near complete loss of motion of a motion segment due to developmental fusion, or successful or unsuccessful attempt at surgical arthrodesis	Meets the criteria of DRE lumbosacral categories III and IV; that is, both radiculopathy and alteration of motion segment integrity are present; significant lower extremity impairment is present as indicated by atrophy or loss of reflex(es), pain, and/or sensory changes within an anatomic distribution (dermatomal), or electromyographic findings as stated in lumbosacral category III and alteration of spine motion segment integrity as defined in lumbosacral category IV
or	*or*
fractures: (1) greater than 50% compression of one vertebral body without residual neurologic compromise	fractures: (1) greater than 50% compression of one vertebral body with unilateral neurologic compromise

AMA 5th Ed.

5th Edition for the **first time** addresses fusion surgery, and defines it as "AOMSI", meaning surgery transforms a DRE I or DRE II case to a DRE IV case.

113

Case 4: Lumbar Fusion AMA Guides, 5th Edition

- DRE Category IV
- **20 - 23 % WPI**
- Based on Fusion
  - Loss of Motion Segment Integrity

114

Case 4: Lumbar Fusion
AMA Guides, 6th Edition

- 6th Edition has a different methodology to measure instability radiographically.
- 6th Edition retains the concept of "too little motion (surgery) qualifies" as loss of motion segment integrity.
- Thus, **use the same diagnosis row** for:
  - Radiculopathy from HNP, NO surgery
  - Radiculopathy from HNP, surgery
    - Discectomy with or without Fusion
  - Fusion with or without radiculopathy

115

Case 4, Lumbar Fusion, 6th Edition

- Back pain without leg pain or leg deficit

MOTION SEGMENT LESIONS					
Intervertebral disk herniation and/or AOMSI[a] *Note:* AOMSI includes instability (specifically as defined in the *Guides*), arthrodesis, failed arthrodesis, dynamic stabilization or arthroplasty, or combinations of those in multiple-level conditions Errata	0 Imaging findings of intervertebral disk herniation without a history of clinically correlating radicular symptoms	5 6 7 8 9 Intervertebral disk herniation(s) or documented AOMSI, at a single level or multiple levels with medically documented findings; with or without surgery *and* with documented resolved radiculopathy at clinically appropriate level(s) or nonverifiable radicular complaints at clinically appropriate level(s), present at the time of examination[a]	10 11 12 13 14 Intervertebral disk herniation and/or AOMSI at a single level with medically documented findings; with or without surgery *and* with documented residual radiculopathy at the clinically appropriate level present at the time of examination (*see Physical Examination adjustment grid in Table 17-7 to grade radiculopathy*)	15 17 19 21 23 Intervertebral disk herniations and/or AOMSI at multiple levels, with medically documented findings; with or without surgery *and* with ~~or without~~ documented residual radiculopathy at a single clinically appropriate level present at the time of examination (*see Table 17-7 to grade radiculopathy*)	25 27 29 31 33 Intervertebral disk herniations and/or AOMSI, at multiple levels, with medically documented findings; with or without surgery *and* with documented signs of residual bilateral or multiple-level radiculopathy at the clinically appropriate levels present at the time of examination (*see Table 17-7 to grade radiculopathy*)

Example 4: Lumbar Radiculopathy
AMA Guides, 6th Edition

- **Diagnosis:** Status post lumbar fusion at L4-5 **Impairment Rating:** Regional Impairment: Diagnosis is consistent with "Intervertebral disk herniation and/or AOMSI at a single level or multiple levels with medically documented findings; with or without surgery,
- and
- with documented **resolved radiculopathy** at the clinically appropriate level(s), **or nonverifiable radicular complaints** …" and therefore, assigned to class 1 with default impairment of 7% WPI.

?

117

Example 4: Lumbar Radiculopathy
AMA Guides, 6th Edition

- Some might argue, surgery is NOT to be considered in the 6th Edition ratings.

Page 570, Table 17-4 Lumbar Spine Regional Grid: Spine Impairments

SOFT TISSUE AND NON-SPECIFIC CONDITIONS				
Non-specific chronic, or chronic recurrent low back pain (also known as: chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, SI joint dysfunction, etc)	0 Documented history of sprain/strain-type injury, now **resolved, or occasional complaints of back pain with no objective findings** on examination	0 1 2 3 3 Documented history of sprain/strain type injury with continued complaints of **axial and/or nonverifiable radicular complaints** and similar findings on multiple occasions (see Sec. 17.2, General Considerations)	No mention of leg symptoms, Or of leg findings.	

118

Example 4: Lumbar Fusion

- **Current Symptoms:** Reported some improvement in his back pain and no significant leg pain.
- **Functional History:** PDQ score of 120, consistent with severe disability. Pain with all ADLs, "prevents me from even sedentary work".
- **Physical Exam:** Decreased lumbar range of motion,
- Positive SLR test on the right at 30° as it increases his low back pain.
- Normal neurologic exam.

119

TABLE 17-7
Physical Examination Adjustment: Spine

Physical Examination Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Lumbar Neural Tension Signs	Negative straight leg raising test for radicular pain or invalid examination		Positive straight leg raising test, with reproducible radicular pain at 35°–70°	Back Pain, NOT radicular Leg pain	
Cervical Compression/ Foraminal Compression	Negative cervical compression/ foraminal compression		Positive cervical compression/foraminal compression (Spurling's test) with reproducible radicular pain		
Reflexes	Normal and symmetrical		New and asymmetrical abnormality consistent with other radicular findings (ie, differentiate between old and new changes)		
Atrophy UE LE	<1 cm <1 cm	1.0–1.9 cm 1.0–1.9 cm	2.0–2.9 cm 2.0–2.9 cm	3.0–3.5 cm 3.0–3.5 cm	>3.5 cm >3.5 cm
Sensory Deficit	No loss of sensibility, abnormal sensation, or pain	Diminished light touch (with or without minimal abnormal sensations or pain) in a clinically appropriate distribution, that is forgotten during activity	Diminished light touch (with some abnormal sensations or slight pain) in a clinically appropriate distribution, that interferes with some activities	Decreased protective sensibility (with abnormal sensations or moderate pain in a clinically appropriate distribution) that may prevent some activities	Absent superficial pain and tactile sensibility or absent protective sensibility (abnormal sensations, or severe pain) that prevents all activity
Motor Strength	Normal Active movement against gravity with full resistance (5/5)	Active movement against gravity and some resistance (4/5)	Active movement against gravity only, without resistance (3/5)	Active movement with gravity eliminated (2/5)	Slight contraction and no movement or no contraction (0–1/5)

Clinical Studies: Spine (page 581)

TABLE 17-9
Clinical Studies Adjustment: Spine

Clinical Studies Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Imaging studies: Radiographs, bone scan, MRI	Imaging findings do not support symptoms or structural diagnosis within normal limits *or* normal age-related changes *or* clinically insignificant degenerative changes, or findings on the side opposite clinical presentation		CT/MRI/other imaging findings consistent with clinical presentation, including evidence of AOMSI with segmental instability, fusion, or motion preservation device defined by region (see row below)	UNLESS Surgical "Oops"	Imaging evidence of major surgical complications, including infection or major deformity
Electrodiagnostic testing	Normal		EMG evidence consistent with single nerve root radiculopathy		EMG evidence consistent with multiple nerve root radiculopathy

Note: CT indicates computed tomography; MRI, magnetic resonance imaging; AOMSI, alteration of motion segment integrity; and EMG, electromyographic.

If a diagnosis of AOMSI, is made, imaging studies should be excluded as a grade modifier. P 563 ALSO includes *stenosis* pseudarthrosis, fracture, or spondylolisthesis.

Example 17-14: Class 2 p 590

- Reported some improvement in his back pain and continued to experience symptoms even with sedentary activity, consistent with **Grade 4**
- **Functional Assessment:** The PDQ is 120 consistent with **Grade 3.**

P 575

TABLE 17-6
Functional History Adjustment: Spine

Functional History Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Activity	Asymptomatic; problem resolved; inconsistent symptoms	Pain; symptoms with strenuous/ vigorous activity	Pain; symptoms with normal activity	Pain; symptoms with less-than-normal activity (minimal activity)	Pain; symptoms at rest, limited to sedentary activity
PDQ or alternative validated functional assessment, scaled appropriately	No disability 0	Mild disability 0–70	Moderate disability 71–100	Severe disability 101–130	Extreme disability 131–150

Note: PDQ indicates Pain Disabilities Questionnaire.

122

Functional History (Page 572)

The examiner must assess the reliability of the functional reports, recognizing the potential influence of behavioral and psychosocial factors.

If the grade for Functional History differs by two or more grades from that described by Physical Examination or Clinical Studies, the Functional History should be assumed to be **unreliable**.

If the Functional History is determined to be unreliable or inconsistent with other documentation or clinical findings, it is **excluded** from the grading process.

123

Example 17-14: Class 2 p 590

- Adjustment Grids:
  - Functional History: Grade modifier 3 or Grade 4.
  - Note history is consistent with grade modifier 4 and PDQ score is consistent with grade 3 (assuming both are reliable, select highest value for net adjustment calculation).
  - Physical Examination: Grade modifier is 0 – No findings.
  - Clinical Testing: Not applicable - AOMSI
- Thus, Functional History is 2 or more Grades higher than either Physical Exam or Clinical Studies and is excluded.
- No Grade Modifiers are applicable.
- Use Class 1, Grade C
  - From Row for AOMSI = 7 % WPI
  - From Row for Non-Specific Backache = 2 % WPI

124

My Bias: Call it AOMSI

- Lumbar fusion with poor result

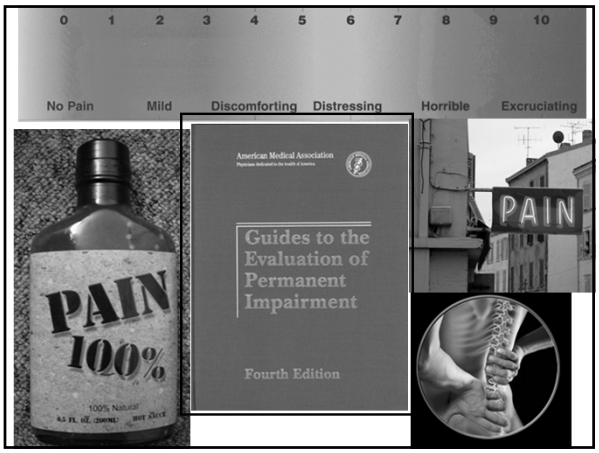
MOTION SEGMENT LESIONS

	0	5 6 7 8 9	10 11 12 13 14	15 17 19 21 23	25 27 29 31 33
Intervertebral disk herniation and/or AOMSI* *Note:* AOMSI includes instability (specifically as defined in the *Guides*), arthrodesis, failed arthrodesis, dynamic stabilization or arthroplasty, or combinations of those in multiple-level conditions Errata	Imaging findings of intervertebral disk herniation without a history of clinically correlating radicular symptoms	Intervertebral disk herniation(s) or documented AOMSI, at a **single level or multiple levels with medically documented findings; with or without surgery** *and* **with documented resolved radiculopathy at clinically appropriate level(s) or nonverifiable radicular complaints** at clinically appropriate level(s), present at the time of examination*	Intervertebral disk herniation ~~and~~/or AOMSI at a **single level** with medically documented findings; with or without surgery *and* with documented **residual radiculopathy at the clinically appropriate level** present at the time of examination *(see Physical Examination adjustment grid in Table 17-7 to grade radiculopathy)*	Intervertebral disk herniations ~~and~~/or AOMSI at **multiple levels**, with medically documented findings; with or without surgery *and* with ~~or without~~ documented residual radiculopathy at a single clinically appropriate level present at the time of examination *(see Table 17-7 to grade radiculopathy)*	Intervertebral disk herniations and/or AOMSI, at **multiple levels**, with medically documented findings; with or without surgery *and* with documented signs of residual bilateral or multiple-level radiculopathy at the clinically appropriate levels present at the time of examination *(see Table 17-7 to grade radiculopathy)*

Hypothetical Lumbar Fusion Cases

Case	4th Edition	5th Edition	6th Edition
Fusion for BACKACHE	DRE II 5 %	DRE IV 20 - 23 %	1 - 9 %
Fusion for radiculopathy	DRE III 10 %	DRE VI 25 - 28 %	5 - 33 %
Fusion for proven instability	DRE IV 20 %	DRE IV 20 - 23 %	5 - 9 %

126



Pain: Chapter 15, 4th Edition

Figure 2. Pain Intensity-frequency Grid.

Intensity	Frequency			
	Intermittent	Occasional	Frequent	Constant
Minimal				
Slight				
Moderate				
Marked				

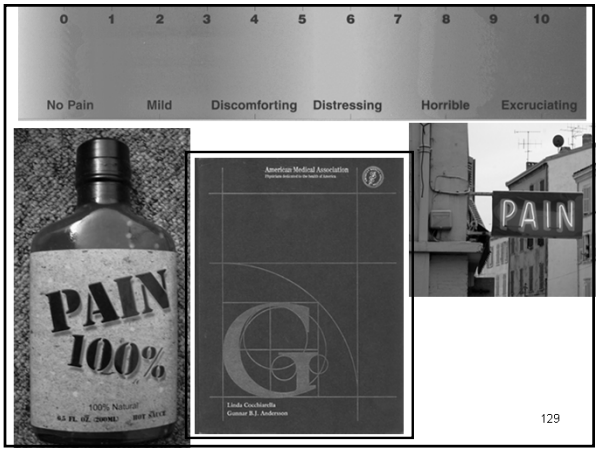
The Pain Intensity-frequency Grid (Fig. 2, above) should be interpreted according to the guidelines below. The physician should indicate in the impairment report in which category of the grid the pain impairment lies. In some instances, an impairment percent applicable to the patient's pain may be determined, if the condition causing the pain can itself be evaluated according to the criteria applicable to a particular organ system as with example 3 (p. 313).

Intensity

Page 310

- Pain rated with WORDS, not with a percentage.
- "Usually no exact relationship exists among the degree of pain, extent of pathologic change, and extent of impairment." p309

128



129

2.5e Pain (Corrected version)

- "The impairment ratings in the body organ system chapters make allowance for **expected** accompanying pain. Chronic pain, also called chronic pain syndrome, is discussed in the chapter on pain (Chapter 18)."
  - Errata

130

18.3a (page 570)
When this chapter should be used

1. Excess Pain in verifiable medical conditions.
   Example: Lumbar Radiculopathy following lumbar diskectomy with persisting objective findings.

But: Text states "10 % by DRE …usually appropriate … some individuals excess pain…severe ADL deficits, suggesting a level of impairment greater than 10 %"

Suggests authors didn't know authors of *5th Edition* Spine chapter would change *4th Edition* DRE III 10 % to a *5th Edition* range of 10 – 13 %.

131

"Double Dipping" When Rating Pain


AMA press

American Medical Association
Physicians dedicated to the health of America

The Guides Newsletter

Expert advice, practical information, and current trends on impairment evaluation

January/February 2002

Also in this issue
Clinical Update: Chronic Fatigue Syndrome
Calendar of Events

Pain Evaluation: Fifth Edition Approaches

by James Robinson, MD, PhD; Dennis C. Turk, PhD; and John D. Loeser, MD

The Problem of "Double Dipping"

Guides Newsletter Jan/Feb 2002, page 10

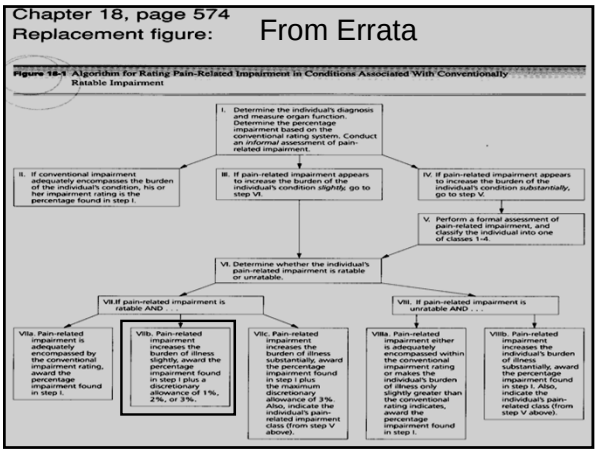
- "Specific problem…allows…1% to 3% for PRI at their discretion. Other chapters…also permit…discretionary impairment of up to 3%.
- This raises the **question** of whether it is permissible…to award 3% **discretionary** impairment…conventional rating, **and then** award an **additional** 3% on the basis of …**Pain Related Impairment.**

• The answer is "no".

- For example,… DRE II 8 %, …cannot make an additional quantitative award based on …Chapter 18."

133

Chapter 18, page 574
Replacement figure: From Errata



135

PDQ

- **Used** in the Pain Chapter to determine impairment, and in the Spine Chapter as a potential grade modifier (Functional History)

136

Chapter 3: Pain

Degree of Pain-Related Impairment	Pain Disability Questionnaire → (PDQ)	Whole Person Impairment (%)
None	0	0
Mild	1- 70	0
Moderate	71-100	1
Severe	101-130	2
Extreme	131-150	3

137

Chapter 3: Pain, p 39

- **3.3b Rating Impairment When Pain Accompanies Objective Findings of Injury or Illness That Permit Rating Using Another Chapter in the *Guides***
- The PRI system that was developed for the Sixth Edition of the *Guides* makes a basic distinction between assessing pain in conditions that can be rated according to principles outlined in Chapters 4 through 17, vs ones that cannot be rated. **The PRI system outlined in this chapter is used *only* if a patient presents with a painful condition and cannot be rated according to principles outlined in Chapters 4 to 17.** It should also be noted that patients' subjective experiences regarding their conditions are considered in the ratings described in Chapters 4 to 17.

138

Debate

- What if the 6th Edition has a clear methodology to rate an injury or illness, but the rating is ZERO Percent?
- Can you then go to the pain chapter to rate impairment??

139

Errata: Chapter 2 Correction

- **2.4d Pain and Suffering**
- The impairment ratings in the body organ system chapters make allowance for most of the functional losses accompanying pain. **It should be recognized that a zero percent impairment rating in Chapters 4-17 is a numerical impairment rating.** The broader impairment rating issues associated with pain are discussed in further detail in Chapter 3.

140

Case 5: ACL & Medial Meniscal Tears

- Mr. E is a 45 year old who slipped and fell down stairs at work, sustaining an Anterior Cruciate Ligament (ACL) tear and a Medical Meniscal tear.
- Treatment included an ACL reconstruction and a partial medial meniscectomy.
- No complications

142

Case 5: ACL & Medial Meniscal Tears

- At MMI, back at work.
- Mild median knee pain with heavy activity.
- Mild difficulty with running > 100 yards.
- No pain or problems with stairs and ladders.
- No mechanical symptoms.
  - No catching, locking, giving way, etc.
- No use of braces or ambulation aids.
- No pain medications.
- Can walk several miles.

143

Case 5: ACL & Medial Meniscal Tears

- Physical Exam:
  - Mild antalgic limp
  - No effusion
  - Motion = minus 5° (5° extension lag) to 120°
  - Left thigh 1.5 cm of atrophy (no calf atrophy)
  - Mild ACL laxity (3-4 mm)
  - Opposite knee and leg are normal
- Clinical studies:
  - MRI 1 week after injury showed ACL/MM tears
  - Weight bearing x-ray at MMI shows 3 mm medial joint space (cartilage interval) bilaterally (both knees).

144

Case 5: ACL & Medial Meniscal Tears
4th & 5th Edition Rating [Identical]

- Potential Choices for rating.
- Must consider each


Condition	Degree	Section	Table	Page	Rating (% Whole Person)
Gait derangement	Mild	3.2b	36	76	7%
Atrophy	Mild	3.2c	37	77	1%-2%
Loss of motion (flexion contracture)	Mild	3.2e	41	78	4%
Arthritis	3 mm	3.2g	62	83	3%
Anterior cruciate ligament laxity	Mild	3.2i	64	85	3%
Medial meniscectomy	Partial	3.2i	64	85	1%

Gait Derangement
A Solitary Category of the Lower Extremity

- Almost any Condition can cause
- Only **Permanent** Conditions are Considered
- Specific Causation must be **Clear**
- **Cannot** be used with any other method of rating lower limb impairment
- A New Category in the 4th Edition
- Section 3.2b 3/75

146

Gait Derangement
A Solitary Category of the Lower Extremity

Table 17-2 Guide to the Appropriate Combination of Evaluation Methods

Open boxes indicate impairment ratings derived from these methods can be combined.

	Limb Length Discrepancy	Gait Derangement	Muscle Atrophy	Muscle Strength	ROM Ankylosis	Arthritis (DJD)	Amputation	Diagnosis-Based Estimates (DBE)	Skin Loss	Peripheral Nerve Injury	Complex Regional Pain Syndrome (CRPS)	Vascular
Limb Length Discrepancy		X					X					
Gait Derangement	X		X	X	X	X	X	X	X	X	X	X
Muscle Atrophy		X		X	X	X	X	X		X	X	

147

Gait Derangement

- Must be Permanent Gait Derangement in persons who are dependent on Assistive Devices [Contradicted by the Table].
- **Whenever possible use a more specific method.**
- When Gait is uses a **rationale should be included in the report [WHY???]**
- Should be **supported** by pathologic findings
- Must be **explainable**… **not just subjectively asserted**
- Explained well in 5th Edition

148

4th Ed. Table 36, Page 76
5th Ed. Table 17-5, page 529

- Note: Impairment may exceed 40% or the amputation value
  - Rate only one of the lower limbs if both are involved. [“unspoken”]
  - 2 crutches “ties up” both arms and precludes using the arms while standing.

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

Unilateral Muscle Atrophy
Considered Evidence of Muscle Dysfunction
“Measured”

- Not Combined With Strength, Gait Disturbance, Peripheral Nerve, Arthritis, ROM & Ankylosis, Amputation, DBE, and CRPS
- Consider Unrelated Clinical Conditions as “cause” for apparent atrophy
  - edema, venous stasis, DVT
  - Invalidates rating by atrophy

150

Unilateral Muscle Atrophy

Table 17-2 Guide to the Appropriate Combination of Evaluation Methods

Open boxes indicate impairment ratings derived from these methods can be combined.

	Limb Length Discrepancy	Gait Derangement	Muscle Atrophy	Muscle Strength	ROM Ankylosis	Arthritis (DJD)	Amputation	Diagnosis-Based Estimates (DBE)	Skin Loss	Peripheral Nerve Injury	Complex Regional Pain Syndrome (CRPS)	Vascular
Limb Length Discrepancy		X					X					
Gait Derangement	X		X	X	X	X	X	X	X	X	X	X
Muscle Atrophy		X		X	X	X	X	X		X	X	

- Atrophy is one of the our ways to access muscle function (gait, weakness, nerve injury)
  - Use **ONLY one** of the 4 methods.

151

Muscle Atrophy

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)

4th Ed. page 77
5th Ed. page 530
Table 17-6

152

Unilateral Muscular Atrophy

- Must measure at the same level
  - -Thigh 10cm above the superior pole of the patella
  - -Calf at maximal level
- Atrophy **common** after menisectomy, ankle fracture, etc, and yet NOT commonly measured.
- Section 3.2c Page 3/76, 4th Edition
  Page 530, 5th Edition

153

Range of Motion

- 4th Edition § 3.2 e (pages 77-78)
- Table 41, Knee Joint motion impairments
- Inconsistency renders results invalid
- Active ROM = full effort and cooperation
- Choose category reflecting greatest impairment

- 5th Edition, § 17.2f (pages 533-538)
- Table 17-10

154

Range of Motion Problems

- Motivation and pain may affect measurement
- Need an organic basis to explain deficiency
- Use instrument or goniometer
  - **DO NOT "EYEBALL".**
- Understand specified joint positioning when obtaining measurements
- [ROM Criteria are different in 5th Edition]
- Figures demonstrate how to position the patient and measure ROM
- 3rd Edition has more Figures showing positioning.

155

Knee Motion

5th Edition, Table 17-10, Page 537

Table 41. Knee Impairments. Page 78

Motion	Whole-person (lower extremity) impairment (%) Mild: 4% (10%)	Moderate: 8% (20%)	Severe: 14% (35%)
Flexion	Less than 110°	Less than 80°	Less than 60° +1% (2%) per 10° less than 60°
Flexion contracture	5°-9°	10°-19°	20°+
Deformity measured by femoral-tibial angle; 3° to 10° valgus is considered normal			
Varus	2° valgus-0° (neutral)	1°-7° varus	8°-12° varus; add 1% (2%) per 2° over 12°
Valgus	10°-12°	13°-15°	16°-20°; add 1% (2%) per 2° over 20°

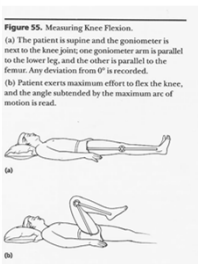


Figure 55. Measuring Knee Flexion.
(a) The patient is supine and the goniometer is next to the knee joint; one goniometer arm is parallel to the lower leg, and the other is parallel to the femur. Any deviation from 0° is recorded.
(b) Patient exerts maximum effort to flex the knee, and the angle subtended by the maximum arc of motion is read.

EXAMPLE
15° Flexion contracture - 90° Flexion

Table 41. Knee Impairment.

Motion	Whole-person (lower extremity) impairment (%)		
	Mild: 4% (10%)	Moderate: 8% (20%)	Severe: 14% (35%)
Flexion	Less than 110°	Less than 80°	Less than 60° +1% (2%) per 10° less than 60°
Flexion contracture	5°-9°	10°-19°	20°+
Deformity measured by femoral-tibial angle; 3° to 10° valgus is considered normal			
Varus	2° valgus-0° (neutral)	1°-7° varus	8°-12° varus; add 1% (2%) per 2° over 12°
Valgus	10°-12°	13°-15°	16°-20°; add 1% (2%) per 2° over 20°

ROM or Ankylosis

Can **NOT** Combine with the following Categories

- Gait Derangement
- Muscle Atrophy
- Manual Muscle Testing
- Arthritis
- Diagnosis
- Section 3.2e p. 3/77

158

Range of Motion/Ankylosis

Table 17-2 Guide to the Appropriate Combination of Evaluation Methods

Open boxes indicate impairment ratings derived from these methods can be combined.

	Limb Length Discrepancy	Gait Derangement	Muscle Atrophy	Muscle Strength	ROM Ankylosis	Arthritis (DJD)	Amputation	Diagnosis-Based Estimates (DBE)	Skin Loss	Peripheral Nerve Injury	Complex Regional Pain Syndrome (CRPS)	Vascular
Limb Length Discrepancy		X					X					
Gait Derangement	X		X	X	X	X	X	X	X	X	X	X
Muscle Atrophy		X		X	X	X	X	X		X	X	
Muscle Strength		X	X		X	X		X		X	0	
ROM Ankylosis		X	X	X		X		X			0	

159

Arthritis

Expanded Criteria in 4th Edition

- Radiographic Measurements of Cartilage Space
- Plain Films: 36 inch "camera to film" distance
  - **WEIGHT BEARING films**
  - Beam PARALLEL to the joint surface
  - Knee can NOT have a flexion contracture
- Text specifies what view to use for measurement
- Combine with Categories noted in Table
- Section 3.2e p.3/77

160

Arthritis: Rate by Cartilage Interval

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.

Page 83

5th Edition table 17-31, page 544

161

5th Edition

Table 17-2 Guide to the Appropriate Combination of Evaluation Methods

Open boxes indicate impairment ratings derived from these methods can be combined.

	Limb Length Discrepancy	Gait Derangement	Muscle Atrophy	Muscle Strength	ROM Ankylosis	Arthritis (DJD)	Amputation	Diagnosis-Based Estimates (DBE)	Skin Loss	Peripheral Nerve Injury	Complex Regional Pain Syndrome (CRPS)	Vascular
Limb Length Discrepancy		X					X					
Gait Derangement	X		X	X	X	X	X	X	X	X	X	X
Muscle Atrophy		X		X	X	X	X	X		X	X	
Muscle Strength		X	X		X	X		X		X	0	
ROM Ankylosis		X	X	X		X		X			0	
Arthritis (DJD)		X	X	X	X							
Amputation	X	X	X	X								
Diagnosis-Based Estimates (DBE)		X	X	X	X							
Skin Loss		X										
Peripheral Nerve Injury		X	X	X							X	
Complex Regional Pain Syndrome (CRPS)		X	X	0	0					X		X
Vascular		X									X	

X = Do not use these methods together for evaluating a single impairment.
0 = See specific instructions for CRPS of the lower extremity.

Arthritis

Can **NOT** be combined with the following Categories

- Gait Derangement
- Muscle Atrophy
- Rom ~ Ankylosis
- Muscle Strength
- In this case only 1 year after injury, the 3 mm Medial Joint Space was **bilateral**, and related to age, not injury.

163

Diagnosis Based Estimates

Expanded Criteria in 4th Edition

- Pelvic Fracture
- Intra-articular & Displaced Fractures
- HIP Replacement based on score
- Knee Replacements based on score
- Femoral Shaft Fractures
- Tibial Shaft Fractures
- Automatic Assignment based on Presence (Diagnosis)

164

Examples of Commonly Used DBEs

- Meniscectomy
  Medial or Lateral Partial
  1 % WP (2%) Lower Extremity
- Total Meniscectomy
  3 % WP (7%) Lower Extremity
- Medial & Lateral
  Partial… 4 % WP or (10 % LE)
  Total…. 9 % WP or (22 % LE)
- 4th Edition, Table 64, page 85
- 5th Edition, Table 17-33, page 546

165

Diagnosis Based Estimates

Can **NOT** be combined with the following Categories

- Gait Derangement
- Muscle Atrophy
- Muscle Testing

- ROM or Ankylosis ***except hip fractures***
- ***Section 3.2i page 3/84, 4th Edition***
- ***Section 17.2j, page 545, 5th Edition***

166

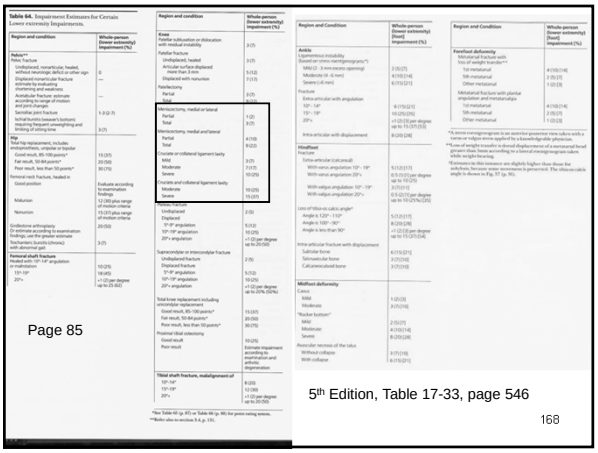
5th Edition, page 526

Table 17-2 Guide to the Appropriate Combination of Evaluation Methods

Open boxes indicate impairment ratings derived from these methods can be combined.

	Limb Length Discrepancy	Gait Derangement	Muscle Atrophy	Muscle Strength	ROM Ankylosis	Arthritis (DJD)	Amputation	Diagnosis-Based Estimates (DBE)	Skin Loss	Peripheral Nerve Injury	Complex Regional Pain Syndrome (CRPS)	Vascular
Limb Length Discrepancy		X					X					
Gait Derangement	X		X	X	X	X	X	X	X	X	X	X
Muscle Atrophy		X		X	X	X	X	X		X	X	
Muscle Strength		X	X		X	X		X		X	0	
ROM Ankylosis		X	X	X		X		X			0	
Arthritis (DJD)		X	X	X	X							
Amputation	X	X	X	X								
Diagnosis-Based Estimates (DBE)		X	X	X	X							
Skin Loss		X										
Peripheral Nerve Injury		X	X	X							X	
Complex Regional Pain Syndrome (CRPS)		X	X	0	0					X		X
Vascular		X									X	

X = Do not use these methods together for evaluating a single impairment.
0 = See specific instructions for CRPS of the lower extremity.



Page 85

5th Edition, Table 17-33, page 546

168

Region and condition	Whole-person (lower extremity) impairment (%)
Knee	
Patellar subluxation or dislocation with residual instability	3 (7)
Patellar fracture	
Undisplaced, healed	3 (7)
Articular surface displaced more than 3 mm	5 (12)
Displaced with nonunion	7 (17)
Patellectomy	
Partial	3 (7)
Total	9 (22)
Meniscectomy, medial *or* lateral	
Partial	1 (2)
Total	3 (7)
Meniscectomy, medial *and* lateral	
Partial	4 (10)
Total	9 (22)
Cruciate *or* collateral ligament laxity	
Mild	3 (7)
Moderate	7 (17)
Severe	10 (25)
Cruciate *and* collateral ligament laxity	
Moderate	10 (25)
Severe	15 (37)
Plateau fracture	
Undisplaced	2 (5)
Displaced	
5°-9° angulation	5 (12)
10°-19° angulation	10 (25)
20°+ angulation	+1 (2) per degree up to 20 (50)

Case 5: ACL & Medial Meniscal Tears
4th & 5th Edition Rating [Identical]

- Potential Choices for rating.
- Must consider each

Condition	Degree	Section	Table	Page	Rating (% Whole Person)
Gait derangement	Mild	3.2b	36	76	7%
Atrophy	Mild	3.2c	37	77	1%-2%
Loss of motion (flexion contracture)	Mild	3.2e	41	78	4%
Arthritis	3 mm	3.2g	62	83	3%
Anterior cruciate ligament laxity	Mild	3.2i	64	85	3%
Medial meniscectomy	Partial	3.2i	64	85	1%

Case 5: ACL & Medial Meniscal Tears
6th Edition Rating

- 6th Edition is Diagnosis Based.
- Table 16-3, page 509
- **Page 497, Right Column, Paragraph 5**
  - This process is repeated for each separate diagnosis in each limb involved. In most cases, only 1 diagnosis in a region (ie, hip, knee and/or foot/ankle) will be appropriate. If a patient has 2 significant diagnoses, for instance, ankle instability and posterior tibial tendonitis, the examiner should use the diagnosis with the highest impairment rating in that region that is causally-related for the impairment calculation.

172

Case 5: ACL & Medial Meniscal Tears
6th Edition Rating

- Option: Rate the partial meniscectomy

Page 509, Partial Table 16-3 Knee Regional Grid – Lower Extremity Impairments: Row 11, Column 3

LIGAMENT / BONE / JOINT		Do not use with PE stability	Do not use with PE stability		
Meniscal injury		1 2 2 2 3 Partial (medial or lateral) meniscectomy, meniscal tear, or meniscal repair	19 20 22 24 25 Total (medial and lateral)		
		5 6 7 8 9 Total meniscectomy (medial or lateral) or meniscal transplant (allograft)			
		7 8 10 12 13 Partial (medial and lateral)			

173

Case 5: ACL & Medial Meniscal Tears
6th Edition Rating

510 Guides to the Evaluation of Permanent Impairment

TABLE 16-3 (CONTINUED) Knee Regional Grid – Lower Extremity Impairments

DIAGNOSTIC CRITERIA (KEY FACTOR)	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
IMPAIRMENT RANGES	0% LE	1%–13% LE	14%–25% LE	26%–49% LE	50%–100% LE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
LIGAMENT / BONE / JOINT		Do not use with PE stability	Do not use with PE stability		
Cruciate or collateral ligament injury; Surgery not rating factor	0 No instability	7 8 10 12 13 Mild laxity	14 15 16 17 18 Moderate laxity		
Cruciate and collateral ligament injury; Surgery not rating factor	0 No instability	7 8 10 12 13 Mild laxity	19 20 22 24 25 Moderate laxity	31 34 37 40 43 Severe laxity	

Case 5: 6th Edition Rating
Grade Modifier: Functional History

TABLE 16-6
Functional History Adjustment – Lower Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
GAIT DERANGEMENT	None	Antalgic limp with asymmetric shortened stance, corrects with footwear modifications and/or orthotics	Antalgic limp (in the presence of objectively defined significant pathology) with asymmetric shortened stance; stable with use of external orthotic device (eg, ankle-foot orthosis), routine use of single gait aid (cane or crutch), or positive Trendelenburg test	Antalgic/unstable transfers and ambulation requires routine use of gait aids (2 canes or crutches) or KAFO brace*	Nonambulatory
AAOS LOWER LIMB INSTRUMENT (OR OTHER INVENTORY)	Normal	Mild deficit	Moderate deficit	Severe deficit	Near-total to total deficit

*KAFO indicates knee, ankle, foot orthosis; AAOS, American Academy of Orthopaedic Surgeons.

175

Case 5: ACL/MM, 6th Edition

Page 496, Left Column, Paragraph 1

- Grade modifier 0: no demonstrable interference with function.
- **Grade modifier 1: interference with the vigorous or extreme use of the limb only.**
- Grade modifier 2: antalgic limp that **limits ambulation distance**; **or** regularly uses orthotic device (at least ankle-foot orthosis).
- Grade modifier 3: an antalgic limp; routine use of 2 canes, or 2 crutches, or knee-ankle-foot orthosis.
- Grade modifier 4: non-ambulatory.

176

Case 5: ACL/MM, 6th Edition
Physical Exam Grade Modifier

- **Page 517, Left Column, Paragraph 2**
  - each specific ratable condition. If a physical finding, for example, range of motion, has been used to determine class placement, **that specific finding should not be used to select a grade modifier.** If physical examination findings are determined to be unreliable or inconsistent, or they are for conditions unrelated to the condition being rated, they are excluded from the grading process.

177

Case 5: ACL & Medial Meniscal Tears
6th Edition Rating

510 Guides to the Evaluation of Permanent Impairment

TABLE 16-3 (CONTINUED) Knee Regional Grid – Lower Extremity Impairments

DIAGNOSTIC CRITERIA (KEY FACTOR)	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
IMPAIRMENT RANGES	0% LE	1%–13% LE	14%–25% LE	26%–49% LE	50%–100% LE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
LIGAMENT / BONE / JOINT		Do not use with PE stability	Do not use with PE stability		
Cruciate or collateral ligament injury; Surgery not rating factor	0 No instability	7 8 10 12 13 Mild laxity	14 15 16 17 18 Moderate laxity		
Cruciate and collateral ligament injury; Surgery not rating factor	0 No instability	7 8 10 12 13 Mild laxity	19 20 22 24 25 Moderate laxity	31 34 37 40 43 Severe laxity	

TABLE 16-7
Physical Examination Adjustment – Lower Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
OBSERVED AND PALPATORY FINDINGS (tenderness, swelling, mass, or crepitance)	No consistent findings	Minimal palpatory findings, consistently documented, without observed abnormalities	Moderate palpatory findings, consistently documented, and supported by observed abnormalities	Severe palpatory findings, consistently documented, and supported by observed moderate or greater abnormalities	Very severe palpatory findings, consistently documented, and supported by observed severe abnormalities
STABILITY	Stable	Grade 1 (slight) instability	Grade 2 (moderate) instability	Grade 3 (serious) instability	Gross instability
KNEE		Grade 1 Lachman's test; slight laxity patellar mechanism	Grade 2 Lachman's test; moderate laxity patellar mechanism	Grade 3 Lachman's test; severe laxity patellar mechanism	Straight instability
ALIGNMENT/ DEFORMITY	Normal for individual with symmetry to opposite side	Mild	Moderate	Severe	Very severe
RANGE OF MOTION (reference Section 16.7)	None	Mild or arthrodesis in position of function	Moderate	Severe	Very severe
MUSCLE ATROPHY (asymmetry compared to opposite normal)	<1 cm	1.0–1.9 cm	2.0–2.9 cm	3.0–3.9cm+	4.0 cm+
LIMB LENGTH DISCREPANCY	<1.9 cm	2.0–2.9 cm	3–4.9 cm	5.0–5.9 cm+	6.0 cm+

Case 5, 6th Edition Rating

- Page 546
- ROM: Minus 5° (5° Extension lag) to 120°

FIGURE 16-8
Measuring Knee Flexion

(a) The examinee is supine and the goniometer is next to the knee joint; 1 goniometer arm is parallel to the lower leg, and the other is parallel to the femur. Any deviation from 0° is recorded.
(b) The examinee exerts maximum effort to flex the knee. The flexion angle is obtained from the goniometer.

180

Case 5, 6th Edition Rating

TABLE 16-23

Knee Motion Impairments

Note: If multiple deficits of motion the values are added. Varus/valgus Deformity measured by femoral-tibial angle; 3° to 10° valgus is considered normal.

Severity	Mild	Moderate	Severe
Impairment	10% LEI	20% LEI	35% LEI
Motion			
Flexion	80°–109°	60°–79°	< 60°
Flexion Contracture	5°–9°	10°–19°	> 19°

TABLE 16-7

Physical Examination Adjustment – Lower Extremities

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
OBSERVED AND PALPATORY FINDINGS (tenderness, swelling, mass, or crepitance)	No consistent findings	Minimal palpatory findings, consistently documented, without observed abnormalities	Moderate palpatory findings, consistently documented, and supported by observed abnormalities	Severe palpatory findings, consistently documented, and supported by observed moderate or greater abnormalities	Very severe palpatory findings, consistently documented, and supported by observed severe abnormalities
STABILITY	Stable	Grade 1 (slight) instability	Grade 2 (moderate) instability	Grade 3 (serious) instability	Gross instability
KNEE		Grade 1 Lachman's test; slight laxity patellar mechanism	Grade 2 Lachman's test; moderate laxity patellar mechanism	Grade 3 Lachman's test; severe laxity patellar mechanism	Straight instability
ALIGNMENT/ DEFORMITY	Normal for individual with symmetry to opposite side	Mild	Moderate	Severe	Very severe
RANGE OF MOTION (reference Section 16.7)	None	Mild or arthrodesis in position of function	Moderate	Severe	Very severe
MUSCLE ATROPHY (asymmetry compared to opposite normal)	<1 cm	1.0–1.9 cm	2.0–2.9 cm	3.0–3.9cm+	4.0 cm+
LIMB LENGTH DISCREPANCY	<1.9 cm	2.0–2.9 cm	3–4.9 cm	5.0–5.9 cm+	6.0 cm+

Page 519, Top Part of Table 16-8

TABLE 16-8

Clinical Studies Adjustment – Lower Extremities[a]

What is "Mild", or "Severe" pathology ?

	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
IMAGING STUDIES	No available clinical studies or relevant findings	Clinical studies confirm diagnosis; mild pathology	Clinical studies confirm diagnosis; moderate pathology	Clinical studies confirm diagnosis; severe pathology	Clinical studies confirm diagnosis; very severe pathology
X RAYS					
ARTHRITIS *Note:* Do not use when X-ray cartilage interval is used in diagnostic impairment definition		Cartilage interval normal or less than 25% loss compared to opposite uninjured side; cystic changes on 1 or both sides of joint; loose body <5 mm	Cartilage interval present; however, 25% to 50% loss compared to opposite uninjured side; cystic changes on both sides of joint; loose body 5 mm or greater or multiple loose bodies; radiographic evidence of mild posttraumatic arthrosis or avascular necrosis	Cartilage interval present; however, >50% lost compared to opposite uninjured side; radiographic evidence of moderate posttraumatic arthrosis or avascular necrosis	No cartilage interval; radiographic evidence of severe posttraumatic arthrosis or avascular necrosis

Weight bearing x-rays showed
The same cartilage interval on
Both knees.

Example 16-9, page 526 Similar Case

- The anterior cruciate reconstruction, in good position …, by itself would be a grade 1, mild pathology adjustment.
- The presence of the meniscal tear and subsequent repair (documented in the operation report) would justify moving up a grade to grade 2 for the final clinical studies adjustment.
- The net adjustment is +1, so class 1, grade D, or 12% LEI is the final rating.

184

Case 5: ACL & Medial Meniscal Tears 6th Edition Rating

510 Guides to the Evaluation of Permanent Impairment

TABLE 16-3 (CONTINUED) Knee Regional Grid – Lower Extremity Impairments

DIAGNOSTIC CRITERIA (KEY FACTOR)	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
IMPAIRMENT RANGES	0% LE	1%–13% LE	14%–25% LE	26%–49% LE	50%–100% LE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
LIGAMENT / BONE / JOINT		Do not use with PE stability	Do not use with PE stability		
Cruciate or collateral ligament injury; Surgery not rating factor	0 No instability	7 8 10 12 13 Mild laxity	14 15 16 17 18 Moderate laxity	Final Answer: 12% LEI	
Cruciate and collateral ligament injury; Surgery not rating factor	0 No instability	7 8 10 12 13 Mild laxity	19 20 22 24 25 Moderate laxity	31 34 37 40 43 Severe laxity	

Case 5: ACL & Medial Meniscal Tears 6th Edition Rating

Class 1—Default for Diagnosis = 10% lower extremity impairment

CDX	GMFH	GMPE	GMCS
1	1	1	2

Net adjustment

(GMFH – CDX) 1 – 1 = 0

+ (GMPE – CDX) + 1 – 1 = 0

+ (GMCS – CDX) + 2 – 1 = 1

Net adjustment = 1

Result is class 1 adjustment 1, which results in class 1, grade D = 12% lower extremity impairment.

186

Case 5: ACL & Medial Meniscal Tears 6th Edition Rating

510 Guides to the Evaluation of Permanent Impairment

TABLE 16-3 (CONTINUED) Knee Regional Grid – Lower Extremity Impairments

DIAGNOSTIC CRITERIA (KEY FACTOR)	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
IMPAIRMENT RANGES	0% LE	1%–13% LE	14%–25% LE	26%–49% LE	50%–100% LE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
LIGAMENT / BONE / JOINT		Do not use with PE stability	Do not use with PE stability		
Cruciate or collateral ligament injury; Surgery not rating factor	0 No instability	7 8 10 12 13 Mild laxity	14 15 16 17 18 Moderate laxity		
Cruciate and collateral ligament injury; Surgery not rating factor	0 No instability	7 8 10 12 13 Mild laxity	19 20 22 24 25 Moderate laxity	31 34 37 40 43 Severe laxity