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

AMA Guides by Example for Upper Limb

AMA Guides by Example for Spine

AMA Guides by Example for Lower Limb

Questions

Summary
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

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
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**

[Diagram showing the relationship between Pathology, Impairment, Disability, and Handicap, with additional nodes for Activity, Participation, No Activity Limitation, No Participation Restrictions, Normal Variation, and Environmental Restrictions.]
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**

<table>
<thead>
<tr>
<th>Dx =</th>
<th>Class 0</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnostic Criteria</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ranges</strong></td>
<td>0%</td>
<td>1% - 13%</td>
<td>14% - 25%</td>
<td>26% - 49%</td>
<td>50% - 100%</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
</tbody>
</table>

**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

**Grade Modifiers**

<table>
<thead>
<tr>
<th>Dx =</th>
<th>Class 0</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnostic Criteria</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ranges</strong></td>
<td>0%</td>
<td>1% - 13%</td>
<td>14% - 25%</td>
<td>26% - 49%</td>
<td>50% - 100%</td>
</tr>
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<td><strong>Grade</strong></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td><strong>Grade modifiers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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
4th Impairment Calculation

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

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

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

4th Impairment Calculation

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

<table>
<thead>
<tr>
<th>Abnormal motion</th>
<th>Other disorders</th>
<th>Regional impairment %</th>
<th>Amputant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Flexion | Extension | Analyses | IMP% |

<table>
<thead>
<tr>
<th>Angle°</th>
<th>IMP%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pro</td>
<td>Sup</td>
</tr>
</tbody>
</table>

Add IMP% F/E + PRO/SUP = [1] IMP% = [2]

4th Impairment Calculation

Figure 24. Neck Flexion (above) and Extension (below)
4th Impairment Calculation

1. Wrist -- Add Impairment by
   \[ \text{UE Imp\%} = (F+E) + (R+U) \]
   \[ = (5+5) + (2+2) = 14\% \]

2. Wrist -- Add Impairment by
   \[ \text{UE Imp\%} = (F+E) + (R+U) + (S+P) \]
   \[ = (5+5) + (2+2) + (1+2) = 17\% \]

4th Impairment Calculation

- Flexion 30 = 5%
- Extension 30 = 5%
- Radial 10 = 2%
- Ulnar 20 = 2%
- Supination 60 = 1%
- Pronation 50 = 2%

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 let's use the above
- Strength index is calculated by
  \( \frac{\text{Normal} - \text{Abnormal}}{\text{Normal}} \)
- Ave 11,11,11, = 11 and 21,22,23 = 22
  \( \frac{22-11}{22} = 50\% \) strength index

4th Impairment Calculation

Example only – do not do this

<table>
<thead>
<tr>
<th>% Strength Loss Index</th>
<th>% Upper Extremity Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>10–30</td>
<td>10</td>
</tr>
<tr>
<td>31–60</td>
<td>20</td>
</tr>
<tr>
<td>61–100</td>
<td>30</td>
</tr>
</tbody>
</table>

Therefore, 10% would be combined with previous

4th Impairment Calculation

Example only – to learn combining

1. Wrist -- Add Impairment by
  \[ \text{UE Imp}\% = (F+E) + (R+U) \]
  \[ = (5+5) + (2+2) = 14\% \]
  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
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

- 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

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

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

### 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

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

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 Classes

<table>
<thead>
<tr>
<th>Class</th>
<th>Problem</th>
<th>Upper Extremity</th>
<th>Whole Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no objective findings</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>1% - 13%</td>
<td>1% - 8%</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>14% - 15%</td>
<td>8% - 15%</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>26% - 49%</td>
<td>16% - 29%</td>
</tr>
<tr>
<td>4</td>
<td>Very severe</td>
<td>50% - 100%</td>
<td>30% - 60%</td>
</tr>
</tbody>
</table>
### 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

<table>
<thead>
<tr>
<th>Dx =</th>
<th>Class 0</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Criteria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranges</td>
<td>0%</td>
<td>1% - 13%</td>
<td>14% - 25%</td>
<td>26% - 49%</td>
<td>50% - 100%</td>
</tr>
<tr>
<td>Grade</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
</tr>
</tbody>
</table>

### 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

* 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 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
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

- 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

<table>
<thead>
<tr>
<th>Grade Modifier</th>
<th>Severity</th>
<th>Range of Motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal</td>
<td>100% of normal motion</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>60% - 90% of normal motion</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>30% - 60% of normal motion</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>&lt; 30% of normal motion</td>
</tr>
<tr>
<td>4</td>
<td>Very severe</td>
<td>Joint ankylosis</td>
</tr>
</tbody>
</table>

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
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)

6th Impairment Calculation

New label same ROM

1. Wrist -- Add Impairment by
   
   \[
   \text{UE Imp\%} = (F+E) + (R+U) 
   \]
   
   \[
   = (3+3) + (2+2) = 10\% 
   \]

2. Wrist -- Add Impairment by
   
   \[
   \text{UE Imp\%} = (F+E) + (R+U) + (S+P) 
   \]
   
   \[
   = (3+3) + (2+2) + (1+2) = 13\% 
   \]
### Compare Impairment Calculation

<table>
<thead>
<tr>
<th>Colles’ Fx</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/E &amp; R/U</td>
<td>14%</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>+ S/P</td>
<td>17%</td>
<td>17%</td>
<td>13%</td>
</tr>
</tbody>
</table>

### 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.

### 4th Impairment Calculation

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

### 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 epicondyar 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 let's 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>
<thead>
<tr>
<th>% Strength Loss Index</th>
<th>% Upper extremity impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30</td>
<td>10</td>
</tr>
<tr>
<td>31-60</td>
<td>20</td>
</tr>
<tr>
<td>61-100</td>
<td>30</td>
</tr>
</tbody>
</table>

Strength index 8.5% < 10 therefore no impairment

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

3. Class - determine by $Dx = \text{Class 1}$

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

<table>
<thead>
<tr>
<th>Diagnostic Criteria</th>
<th>Class 0</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranges</td>
<td>0%</td>
<td>1% - 13%</td>
<td>14% - 25%</td>
<td>26% - 48%</td>
<td>50% - 100%</td>
</tr>
<tr>
<td>Grade</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td></td>
</tr>
<tr>
<td>Grade modifiers</td>
<td>#</td>
<td>##</td>
<td>###</td>
<td>####</td>
<td>#####</td>
</tr>
<tr>
<td>Functional History</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>Physical Exam</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>Clinical Studies</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
</tbody>
</table>

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.

**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**

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

---

### 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 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 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 (normal – would support Dx)
3. Stability
4. Nerve conduction testing
6th Impairment Calculation

Net Adjustment Formula

\[ \text{GMFH} = \text{grade modifier functional history} \]
\[ \text{GMPE} = \text{physical examination} \]
\[ \text{GMCS} = \text{clinical studies} \]
\[ \text{CDx} = \text{class of Dx (DBI) table} \]

\[ \text{Net Adjustment} = (\text{GMFH} - \text{CDx}) + (\text{GMPE} - \text{CDx}) + (\text{GMCS} - \text{CDx}) \]

6th Grade Modifiers

<table>
<thead>
<tr>
<th>Dx =</th>
<th>Class 0</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
</tr>
</tbody>
</table>

Functional | No problem | Mild problem | Severe problem | Very severe problem |
Physical Exam | No problem | Mild problem | Moderate problem | Very severe problem |
Clinical Studies | No problem | Mild problem | Moderate problem | Very severe problem |
6th Impairment Calculation

Dx = Class 1
3,4,5,6,7 - but which
If modifier = 0
Impairment = 5%

Example Only - do not use
Dx = Class 1
3,4,5,6,7 - but which
If modifier = 2
Impairment = 7%

Compare Impairment Calculation

<table>
<thead>
<tr>
<th>Lat Epi</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>+ Functional</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
</tr>
</tbody>
</table>

+ 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

- 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.

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

What more information
- Orthopaedic Short Stories
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

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 Grade Modifiers

6th Impairment Calculation

6th page 405 - Adjustment Grid and Grade Modifiers: Non-Key Factors
• Grade within a class is determined by considering
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  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.

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>
<thead>
<tr>
<th>Grade Modifier 2</th>
<th>Grade Modifier 1</th>
<th>Grade Modifier 3</th>
<th>Grade Modifier 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic</td>
<td>Macysimtichw/ger</td>
<td>Macysimtichw/ger</td>
<td>Macysimtichw/ger</td>
</tr>
<tr>
<td>Symptom to control symptoms</td>
<td>Symptom to control symptoms</td>
<td>Symptom to control symptoms</td>
<td>Symptom to control symptoms</td>
</tr>
<tr>
<td>AND able to perform self-care activities independently</td>
<td>AND able to perform self-care activities with medication but excitation</td>
<td>AND unable to perform self-care activities</td>
<td></td>
</tr>
</tbody>
</table>

QuickDASH score

QuickDASH = 39
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

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 MRI used to confirm
  2. X-rays but PE used for DBI
  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 (also normal - would support Dx)
  3. Stability
  4. Nerve conduction testing

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 Grade Modifiers

Dx =

<table>
<thead>
<tr>
<th>Diagnosis Criteria</th>
<th>Class 0</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranges</td>
<td>0%</td>
<td>1% - 13%</td>
<td>14% - 25%</td>
<td>26% - 49%</td>
<td>50% - 100%</td>
</tr>
<tr>
<td>Grade</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
<td>ABCDE</td>
</tr>
<tr>
<td>Grade modifiers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate problem</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Severe problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very severe problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Exam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild problem</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Moderate problem</td>
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<tr>
<td>Severe problem</td>
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<td></td>
</tr>
<tr>
<td>Very severe problem</td>
<td></td>
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<tr>
<td>Clinical Studies</td>
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<tr>
<td>No problem</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild problem</td>
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<td>Moderate problem</td>
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<tr>
<td>Severe problem</td>
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<tr>
<td>Very severe problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6th Impairment Calculation

Net Adjustment Formula

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

\[ \text{Net Adjustment} = (\text{GMFH} - \text{CDx}) + (\text{GMPE} - \text{CDx}) + (\text{GMCS} - \text{CDx}) = 0 \]

6th Grade Modifiers

<table>
<thead>
<tr>
<th>Dx</th>
<th>Class 0</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranges</td>
<td>0%</td>
<td>1% - 13%</td>
<td>14% - 25%</td>
<td>26% - 49%</td>
<td>50% - 100%</td>
</tr>
<tr>
<td>Grade</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>Functional History</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>Physical Exam</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>Clinical Studies</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
</tbody>
</table>
6th Impairment Calculation

If modifier = 0
Impairment = 5%

OK - so you use the highest impairment
DBI by PE is 6%
DBI by CS is 5%

Significant Comment in ERRATA

Page 387, Right Column, Paragraph 4
and biceps tendinitis, 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

<table>
<thead>
<tr>
<th>Rotator</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBI by PE</td>
<td>0%</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>DBI by CS</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Thank You for Your Attention

An Orthopaedist's Introduction
Upper Limb Examples

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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

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melhorn@onemain.com
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Financial “Conflict of Interest” Disclosure

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  – 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

The speaker is the current President Elect of
AMERICAN ACADEMY OF DISABILITY EVALUATING PHYSICIANS®

“The premiere society for the prevention and management of disability”

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History of the *AMA Guides*

- 1956 - ad hoc committee
- 1971 - First Edition
- 1981 - established 12 expert panels
- 1984 - Second Edition
- 1988 - Third Edition
- 1990 - Third Edition-Revised
- 1993 - Fourth Edition (4 printings)
  - Radical paradigm shift
- 2007 (December) – Sixth Edition

**AMA 6th Edition**

[www.amapress.org](http://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

**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*.”

*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

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

Do whatever Workers’ Comp Bureau or the Lawyers say

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.

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.
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.

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)

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.

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

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

Table 70, Risk Impairment Categories for Cervicothoracic, Thoracoabdominal, and Lumbarosacral Regions

<table>
<thead>
<tr>
<th>Category</th>
<th>Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>I</td>
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<td>6</td>
<td>VI</td>
</tr>
<tr>
<td>7</td>
<td>VII</td>
</tr>
</tbody>
</table>

1. Guarding
   - Parametric muscle guarding or spasm or nonuniform loss of range of motion, dysmetric, or hypometric loss of range of motion (dysmetric, 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.

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.

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, i.e., when the Individual is at MMI.
Reproducibility of Examination

<table>
<thead>
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<tr>
<td>&gt; 0.40</td>
<td>moderate</td>
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<tr>
<td>&gt; 0.60</td>
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</tr>
<tr>
<td>&gt; 0.80</td>
<td>excellent</td>
</tr>
<tr>
<td>1.00</td>
<td>perfect</td>
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</tbody>
</table>

Tenderness

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

<table>
<thead>
<tr>
<th>Finding</th>
<th>Unit of measurement</th>
<th>Kappa Interobserver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bone tenderness</td>
<td>Yes/no</td>
<td>0.40</td>
</tr>
<tr>
<td>Soft-tissue tenderness</td>
<td>Yes/no</td>
<td>0.24</td>
</tr>
<tr>
<td>Muscle spasm</td>
<td>Yes/no</td>
<td>Discarded*</td>
</tr>
</tbody>
</table>

* = Discarded “too unreliable”

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”.

Guides to the Evaluation of Permanent Impairment
Sixth Edition

Chapter 17
The Spine and Pelvis

“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.”

**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.”
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

**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 (e.g., spinal stenosis and AOMSI), the CAUSALLY-RELATED diagnosis that provides the higher impairment rating should be used.” – page 562

**DIAGNOSIS: Surgery**

- “Treatment may alter the functional status of the condition evaluated at MMF. 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

**Errata Changes ALL the tables**

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

- Class 1: 0-3% WPI [0,1,2,3]
- 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.]
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).

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

Case 2: Cervical Strain with Residual

- 1 year later:
  - 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

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

Case 2: Cervical Strain with Residual

- DRE Category II
- 5% WPI
- Base on either:
  - Non-Uniform Range of Motion
  - Non-Verifiable Radicular Complaints
Case #2: Cervical Strain with Residual AMA Guides, 4th Edition Rating

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, differentiation I, Table 71, p. 109), or nonverifiable radicular complaints. There is no objective evidence of radiculopathy or loss of structural integrity.

• DRE Category II
• 5% WPI

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

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; i.e., there are no objective physical, imaging, or electromyographic findings. For dermatomal distributions, see Figures 15-1 and 15-2.

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
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).

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.]

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
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.

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.

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).

Non-Verifiable 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.
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"].

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.

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.

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.

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.

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.
**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

---

**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")

---

**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

---

**Functional History**

- Example 2: PDQ = 80 points

- Grade 2 Functional History Modifier

---

**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
Case 2: Cervical strain with residual

Chapter 17

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.

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.

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

Case 3: Lumbar Radiculopathy

AMA Guides, 4th Edition

• DRE Category III
• 10% WPI
• Based on presence of acute radiculopathy
Case 3: Lumbar Radiculopathy

<table>
<thead>
<tr>
<th>Table 72: DRE Lumbosacral Spine Impairment Categories.</th>
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<tbody>
<tr>
<td>DRE Impairment Category</td>
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<tr>
<td>-------------------------</td>
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<td>VIII</td>
</tr>
</tbody>
</table>

**AMA Guides, 4th Edition**

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

**AMA Guides, 5th Edition**

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

Key Point:
Residual ONE level radiculopathy
Dorsiflexion weakness and leg pain.

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.

Functional History

- PDQ = 65
- Grade 2
### Clinical Studies: Spine (page 581)

<table>
<thead>
<tr>
<th>Clinical Studies Factor</th>
<th>Grade Modifier</th>
<th>Grade Modifier</th>
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<td>EMI evidence</td>
<td>EMI evidence</td>
<td>EMI evidence</td>
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</tr>
</tbody>
</table>

*This leaves radiopathy.

*TL;DR* Imaging studies do not support structural diagnosis within normal limits or normal age-related changes or clinically significant postdegeneration changes, or findings on the opposite clinical side.

**Post-Op Study may Be Grade 0**

If a diagnosis of AOMSI, pseudarthrosis, fracture, or spondylolisthesis is made, imaging studies should be excluded as a grade modifier. P 563 & 577

ALSO includes stenosis, pseudarthrosis, fracture, or spondylolisthesis.

When do you use Imaging as a GRADE Modifier??

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

**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.

When do you use Imaging as a GRADE Modifier??

<table>
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**Example 17-13: Class 2 p 589-590**

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

**Key Point:**

*Residual ONE level radiculopathy*

- Dorsiflexion weakness and leg pain.

**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
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.

- **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.

- **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.

---

**Table 72.** DRE Lumbar Sacral Spine Impairment Categories.

<table>
<thead>
<tr>
<th>DRE impairment category</th>
<th>Description</th>
<th>% impairment of the whole person</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Minor impairment: clinical signs of lumbar injury are insignificant</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>Radiculopathy: evidence of radiculopathy without nerve root compression</td>
<td>5</td>
</tr>
<tr>
<td>III</td>
<td>Radiculopathy or loss of motion segment integrity: criteria for this condition are described in section 1.36, p. 51</td>
<td>10</td>
</tr>
<tr>
<td>IV</td>
<td>Caudal equine flexion pain with bowel or bladder impairment</td>
<td>20</td>
</tr>
<tr>
<td>V</td>
<td>Normal neurologic exam</td>
<td>25</td>
</tr>
<tr>
<td>VI</td>
<td>Decreased lumbar range of motion</td>
<td>40</td>
</tr>
<tr>
<td>VII</td>
<td>Normal neurologic exam</td>
<td>60</td>
</tr>
<tr>
<td>VIII</td>
<td>Normal neurologic exam</td>
<td>75</td>
</tr>
</tbody>
</table>

Same Case: Lumbar Fusion

AMA Guides, 4th Edition

Criteria for Loss of Motion Segment Integrity are Radiographic

- Too much motion only (instability).

AMA Guides, 4th Edition

Guides to the Evaluation of Permanent Impairment

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

- Too much motion only (instability).

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

AMA Guides, 4th Edition

- DRE Category II
- 5% WPI
- REGARDLESS
  - Of Lumbar Fusion
  Differentiator is usual
  Physician imaged “spasm” or Guarding

Case 4: Lumbar Fusion
AMA Guides, 5th Edition

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

Case 4: Lumbar Fusion
AMA Guides, 5th Edition

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

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.
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

Example 4: Lumbar Radiculopathy
AMA Guides, 6th Edition

- Diagnosis: Status post lumbar fusion at L4-5
- Impairment Rating: Regional Impairment

Example 4: Lumbar Fusion
AMA Guides, 6th Edition

- 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.

Example 4: Lumbar Radiculopathy
AMA Guides, 6th Edition

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

Example 17-14: Class 2 p 590

- Adjustment Grids:
  - Functional History: Grade modifier 3 or Grade 4
  - 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

Hypothetical Lumbar Fusion Cases

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fusion for BACKACHE</td>
<td>DRE II 5 %</td>
<td>DRE IV 20 - 23 %</td>
<td>1 - 9 %</td>
</tr>
<tr>
<td>Fusion for radiculopathy</td>
<td>DRE III 10 %</td>
<td>DRE VI 25 - 28 %</td>
<td>5 - 33 %</td>
</tr>
<tr>
<td>Fusion for proven instability</td>
<td>DRE IV 20 %</td>
<td>DRE IV 20 - 23 %</td>
<td>5 - 9 %</td>
</tr>
</tbody>
</table>

My Bias: Call it AOMSI

- Lumbar fusion with poor result
Pain: Chapter 15, 4th Edition

- 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

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

18.3a (page 570)

When this chapter should be used
1. Excess Pain in verifiable medical conditions.
   Example: Lumbar Radiculopathy following lumbar disectomy 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 %.

"Double Dipping" When Rating Pain

The Guides Newsletter
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...convventional 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.”

---

**Chapter 3: Pain**

<table>
<thead>
<tr>
<th>Degree of Pain-Related Impairment</th>
<th>Pain Disability Questionnaire (PDQ)</th>
<th>Whole Person Impairment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mild</td>
<td>1-70</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>71-100</td>
<td>1</td>
</tr>
<tr>
<td>Severe</td>
<td>101-130</td>
<td>2</td>
</tr>
<tr>
<td>Extreme</td>
<td>131-150</td>
<td>3</td>
</tr>
</tbody>
</table>

---

**From Errata**

From Errata

**PDQ**

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

---

**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.
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??

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.

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

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.

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).
**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

---

### Case 5: ACL & Medial Meniscus Tears

<table>
<thead>
<tr>
<th>Condition</th>
<th>Degree</th>
<th>Section</th>
<th>Table</th>
<th>Page</th>
<th>Rating (% Whole Person)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gait Derangement</td>
<td>Mild</td>
<td>3.2b</td>
<td>36</td>
<td>76</td>
<td>7%</td>
</tr>
<tr>
<td>Atrophy</td>
<td>Mild</td>
<td>3.2c</td>
<td>37</td>
<td>77</td>
<td>1%–2%</td>
</tr>
<tr>
<td>Loss of motion (flexion/contraction)</td>
<td>Mild</td>
<td>3.2a</td>
<td>41</td>
<td>78</td>
<td>4%</td>
</tr>
<tr>
<td>Arthritis</td>
<td>3 mm</td>
<td>3.2g</td>
<td>62</td>
<td>83</td>
<td>3%</td>
</tr>
<tr>
<td>Anterior cruciate ligament laxity</td>
<td>Mild</td>
<td>3.2h</td>
<td>64</td>
<td>85</td>
<td>1%</td>
</tr>
<tr>
<td>Medial meniscus tear</td>
<td>Partial</td>
<td>3.2i</td>
<td>64</td>
<td>85</td>
<td>1%</td>
</tr>
</tbody>
</table>

---

**Gait Derangement**

A Solitary Category of the Lower Extremity

- **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

---

**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

---

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 13-2: Guide to the Appropriate Combination of Evaluation Methods

<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Both</th>
<th>Weighted Severe</th>
<th>Unilateral</th>
<th>Bilateral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unilateral Atrophy</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilateral Atrophy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**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
Unilateral Muscle Atrophy

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

Muscle Atrophy

### Table 37. Impairments from Leg Muscle Atrophy.

<table>
<thead>
<tr>
<th>Difference in circumference (cm)</th>
<th>Impairment degree</th>
<th>Whole-person (lower extremity) impairment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Thigh: The circumference is measured 10 cm above the patella with the knee fully extended and the muscles relaxed.</td>
<td>Mild</td>
<td>None</td>
</tr>
<tr>
<td>0 - 0.9</td>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>1 - 1.9</td>
<td>Mild</td>
<td>1 - 2</td>
</tr>
<tr>
<td>2 - 2.9</td>
<td>Moderate</td>
<td>3 - 4</td>
</tr>
<tr>
<td>3+</td>
<td>Severe</td>
<td>5</td>
</tr>
</tbody>
</table>

b. Calf: The maximum circumference on the normal side is compared with the circumference at the same level on the affected side.

<table>
<thead>
<tr>
<th>Difference in circumference (cm)</th>
<th>Impairment degree</th>
<th>Whole-person (lower extremity) impairment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 0.9</td>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>1 - 1.9</td>
<td>Mild</td>
<td>1 - 2</td>
</tr>
<tr>
<td>2 - 2.9</td>
<td>Moderate</td>
<td>3 - 4</td>
</tr>
<tr>
<td>3+</td>
<td>Severe</td>
<td>5</td>
</tr>
</tbody>
</table>

Unilateral Muscular Atrophy

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

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

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.

Knee Motion

<table>
<thead>
<tr>
<th>Motion</th>
<th>Whole-person (lower extremity) impairment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion contracture</td>
<td>Less than 10°</td>
</tr>
<tr>
<td></td>
<td>Less than 0° to 10°</td>
</tr>
<tr>
<td></td>
<td>Less than 0° to 15°</td>
</tr>
<tr>
<td></td>
<td>10° to 15°</td>
</tr>
<tr>
<td></td>
<td>20° to 25°</td>
</tr>
<tr>
<td></td>
<td>30° to 35°</td>
</tr>
<tr>
<td>Varies</td>
<td>1° to 2°</td>
</tr>
<tr>
<td>Valgus</td>
<td>10° to 15°</td>
</tr>
<tr>
<td></td>
<td>20° to 25°</td>
</tr>
</tbody>
</table>

Figure 56. Measuring Knee Flexion.

(1) The patella should be in the anatomic position (not hyper or hypotrophic). The goniometer should be at 90°. (2) Measure flexion contracture. Any deviation from Figure 56 should be recorded. (3) Measure flexion contracture to the maximum degree of flexion involved.

Figure 57. Measuring Knee Valgus.
EXAMPLE
15° Flexion contracture - 90° Flexion

<table>
<thead>
<tr>
<th>Motion</th>
<th>Whole-person (lower extremity) impairment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild: 4% (10%)</td>
<td>Moderate: 8% (20%)</td>
</tr>
<tr>
<td>Flexion contracture</td>
<td>Less than 110°</td>
</tr>
<tr>
<td></td>
<td>Less than 80°</td>
</tr>
<tr>
<td>Flexion contracture</td>
<td>Less than 60° +1% (2%)</td>
</tr>
<tr>
<td></td>
<td>per 10° less than 60°</td>
</tr>
<tr>
<td>Deformity measured by femoral-tibial angle; 3° to 10° valgus is considered normal</td>
<td></td>
</tr>
<tr>
<td>Varus</td>
<td>2° valgus-0° (neutral)</td>
</tr>
<tr>
<td>Valgus</td>
<td>10°-12°</td>
</tr>
</tbody>
</table>

Table 41. Knee Impairment.

Range of Motion/Ankylosis

<table>
<thead>
<tr>
<th>Arthritis: Rate by Cartilage Interval</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cartilage Interval</th>
<th>Page 83</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 mm</td>
<td>2 mm</td>
</tr>
<tr>
<td>1 mm</td>
<td>1 mm</td>
</tr>
<tr>
<td>1 mm</td>
<td>1 mm</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Arthritis (5th Edition)</th>
</tr>
</thead>
</table>

- 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
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.

---

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)

---

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

---

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

---


<table>
<thead>
<tr>
<th>DBE Code</th>
<th>Category</th>
<th>Subcategory</th>
<th>WP</th>
<th>LE</th>
</tr>
</thead>
<tbody>
<tr>
<td>123</td>
<td>Meniscal</td>
<td>Medial</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>456</td>
<td>Meniscal</td>
<td>Lateral</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>789</td>
<td>Meniscal</td>
<td>Total</td>
<td>9%</td>
<td>22%</td>
</tr>
<tr>
<td>012</td>
<td>Meniscal</td>
<td>Medial-Lateral</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td>345</td>
<td>Meniscal</td>
<td>Total-Lateral</td>
<td>9%</td>
<td>22%</td>
</tr>
</tbody>
</table>

---

5th Edition, Table 17-33, page 546
Case 5: ACL & Medial Meniscal Tears
4th & 5th Edition Rating [Identical]

- Potential Choices for rating.
- Must consider each

<table>
<thead>
<tr>
<th>Condition</th>
<th>Degree</th>
<th>Section</th>
<th>Table</th>
<th>Page</th>
<th>Rating (% Whole Person)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gut derangement</td>
<td>Mild</td>
<td>3.2b</td>
<td>36</td>
<td>76</td>
<td>7%</td>
</tr>
<tr>
<td>Atrophy</td>
<td>Mild</td>
<td>3.2c</td>
<td>37</td>
<td>77</td>
<td>1%-2%</td>
</tr>
<tr>
<td>Loss of motion (flexion contracture)</td>
<td>Mild</td>
<td>3.2e</td>
<td>41</td>
<td>78</td>
<td>4%</td>
</tr>
<tr>
<td>Arthritis</td>
<td>3 mm</td>
<td>3.2g</td>
<td>62</td>
<td>83</td>
<td>1%</td>
</tr>
<tr>
<td>Anterior cruciate ligament injury</td>
<td>Mild</td>
<td>3.2f</td>
<td>64</td>
<td>85</td>
<td>3%</td>
</tr>
<tr>
<td>Medial meniscectomy</td>
<td>Partial</td>
<td>3.2i</td>
<td>64</td>
<td>85</td>
<td>1%</td>
</tr>
</tbody>
</table>

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

---

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 (e.g., hip, knee and/or foot/ankle) will be appropriate. If a patient has 2 significant diagnoses, for instance, ankle instability and posterior tibial tendinitis, the examiner should use the diagnosis with the highest impairment rating in that region that is causally-related for the impairment calculation.

---

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

Table 16.3 (Continued) Knee Regional Grid – Lower Extremity Impairments

Grade

<table>
<thead>
<tr>
<th>LIGAMENT / BONE / AVANT</th>
<th>Do not use with PE stability</th>
<th>Do not use with PE instability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial meniscus</td>
<td>3.2i</td>
<td>64</td>
</tr>
<tr>
<td>Partial meniscectomy</td>
<td>3.2f</td>
<td>64</td>
</tr>
</tbody>
</table>

---

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

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

---

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

Table 16.3 (Continued) Knee Regional Grid – Lower Extremity Impairments

Grade

<table>
<thead>
<tr>
<th>LIGAMENT / BONE / AVANT</th>
<th>Do not use with PE stability</th>
<th>Do not use with PE instability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial meniscus</td>
<td>3.2i</td>
<td>64</td>
</tr>
</tbody>
</table>
Case 5: 6th Edition Rating
Grade Modifier: Functional History

<table>
<thead>
<tr>
<th>Grade Modifier</th>
<th>No problem</th>
<th>Mild problem</th>
<th>Moderate problem</th>
<th>Severe problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No functional interference with function</td>
<td>No functional interference with function</td>
<td>No functional interference with function</td>
<td>No functional interference with function</td>
</tr>
<tr>
<td>1</td>
<td>Functional interference with vigorous or extreme use of the limb only</td>
<td>Functional interference with vigorous or extreme use of the limb only</td>
<td>Functional interference with vigorous or extreme use of the limb only</td>
<td>Functional interference with vigorous or extreme use of the limb only</td>
</tr>
<tr>
<td>2</td>
<td>Antalgic limp; limping; weight-bearing; use of single or double canes; use of ankle-foot orthosis</td>
<td>Antalgic limp; limping; weight-bearing; use of single or double canes; use of ankle-foot orthosis</td>
<td>Antalgic limp; limping; weight-bearing; use of single or double canes; use of ankle-foot orthosis</td>
<td>Antalgic limp; limping; weight-bearing; use of single or double canes; use of ankle-foot orthosis</td>
</tr>
<tr>
<td>3</td>
<td>Antalgic limp; routine use of 2 crutches, or knee-ankle-foot orthosis</td>
<td>Antalgic limp; routine use of 2 crutches, or knee-ankle-foot orthosis</td>
<td>Antalgic limp; routine use of 2 crutches, or knee-ankle-foot orthosis</td>
<td>Antalgic limp; routine use of 2 crutches, or knee-ankle-foot orthosis</td>
</tr>
<tr>
<td>4</td>
<td>Non-ambulatory</td>
<td>Non-ambulatory</td>
<td>Non-ambulatory</td>
<td>Non-ambulatory</td>
</tr>
</tbody>
</table>

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.

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

<table>
<thead>
<tr>
<th>DISEASES</th>
<th>CLASS 0</th>
<th>CLASS 1</th>
<th>CLASS 2</th>
<th>CLASS 3</th>
<th>CLASS 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>0</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>1</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>2</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>3</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
<tr>
<td>4</td>
<td>No problem</td>
<td>Mild problem</td>
<td>Moderate problem</td>
<td>Severe problem</td>
<td>Very severe problem</td>
</tr>
</tbody>
</table>

Case 5, 6th Edition Rating

- Page 546
- ROM: Minus 5° (5° Extension lag) to 120°
What is "Mild", or "Severe" pathology?

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.
### Case 5: ACL & Medial Meniscal Tears

#### 6th Edition Rating

<table>
<thead>
<tr>
<th>GRADE</th>
<th>CLASS 0</th>
<th>CLASS 1</th>
<th>CLASS 2</th>
<th>CLASS 3</th>
<th>CLASS 4</th>
<th>CLASS 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLASSIFICATIONS</th>
<th>CLASS 0</th>
<th>CLASS 1</th>
<th>CLASS 2</th>
<th>CLASS 3</th>
<th>CLASS 4</th>
<th>CLASS 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archimandrite</td>
<td>No instability</td>
<td>No instability</td>
<td>No instability</td>
<td>No instability</td>
<td>No instability</td>
<td>No instability</td>
</tr>
<tr>
<td>Archimandrite</td>
<td>0.0% 0.0% 0.0% 0.0% 0.0%</td>
<td>0.0% 0.0% 0.0% 0.0% 0.0%</td>
<td>0.0% 0.0% 0.0% 0.0% 0.0%</td>
<td>0.0% 0.0% 0.0% 0.0% 0.0%</td>
<td>0.0% 0.0% 0.0% 0.0% 0.0%</td>
<td>0.0% 0.0% 0.0% 0.0% 0.0%</td>
</tr>
</tbody>
</table>

- **Class 0:** No instability
- **Class 1:** Mild instability
- **Class 2:** Moderate instability
- **Class 3:** Severe instability
- **Class 4:** Very severe instability

---

**Enjoy Your Flight Home**

**May You Travel Safely**