



Lower Extremity Maximum Medical Improvement and Impairment Rating (MMI/IR)



Material Disclaimer

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The material is not intended to represent the sole approach, method, procedure or opinion appropriate for the medical situations discussed.



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Conflict Between DWC Statutes/Rules and *AMA Guides*

When there is a conflict between
DWC statutes/rules and the *AMA*
Guides...

Be aware of when the DWC
statutes/rules take precedence.

Determining an Impairment Rating for the Lower Extremity

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

**ANATOMIC
DIAGNOSTIC
FUNCTIONAL**

(Page 75)

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

Determining an Impairment Rating for the Lower Extremity

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

Determining an Impairment Rating for the Lower Extremity

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

Determining an Impairment Rating for the Lower Extremity

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

Determining an Impairment Rating for the Lower Extremity

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

13 Methods for Determining a Lower Extremity Impairment Rating

1. Limb length discrepancy (T. 35, p. 75)
2. Gait derangement (T. 36, p. 76)
3. Muscle atrophy (T. 37, p. 77)
4. Muscle strength (T. 38 and 39, p. 77)
5. Range of motion (T. 40-45, p. 78)
6. Ankylosis (T. 46-61, pp. 79-82)
7. Arthritis aka “DJD” (T. 62, p. 83)
8. Amputation (T. 63, p. 83)

13 Methods for Determining a Lower Extremity Impairment Rating

9. Diagnosis Based Estimates – fractures, deformities, dislocations, ligament instability, bursitis, surgical procedures (T. 64, 65, & 66, pp. 85-88)
10. Skin loss (T. 67, p. 88)
11. Peripheral nerve injuries (T. 68, p. 89)
12. Causalgia and RSD/CRPS (p. 89)
(see p. 56 for UE RSD discussion)
13. Vascular disorders (T. 69, p. 89)



To Combine or Not to Combine

- Range of motion impairments are not to be combined with impairments from atrophy (see comment, pg. 78)
- The examiner should choose the impairment that is most clinically relevant to the injury that is being rated.
- Explain your rationale in your report.

To Combine or Not to Combine

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

To Combine or Not to Combine

- An impairment due to atrophy is not to be combined with a diagnosis based estimate.
- Per the comment on page 84 related to Table 64: *“The expected muscle weakness or atrophy is included in the diagnosis-based estimates.”*

To Combine or Not to Combine

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

To Combine or Not to Combine

Instances where impairments can and should be combined include:

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

13 Methods for Determining a Lower Extremity Impairment Rating

Let's look at the specific subsections of Chapter 3.2



Leg Length Discrepancy

Section 3.2a: Limb Length Discrepancy – Table 35

- This methodology is difficult to use in individuals with:
 - Pelvic angulation
 - Knee flexion contracture
 - Significant ankle edema
- Can assess with CT for leg length (CPT 77073).
- Tape measure and/or iliac crest level is not recommended.
- **Discrepancy must be 2 cm or greater to rate > 0%**
(see T. 35, p. 75.)

Gait Derangement

Section 3.2b: Gait Derangement – Table 36

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

Gait Derangement

Section 3.2b: Gait Derangement – Table 36

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

Issues With Using Gait Derangement

Section 3.2b: Gait Derangement - Table 36

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

Issues With Using Gait Derangement

Section 3.2b: Gait Derangement - Table 36

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

See APD 111720

Muscle Atrophy

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

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

Muscle Atrophy

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

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

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

Muscle Weakness

Section 3.2d: Manual muscle testing - Table 39

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

AND....

Range of Motion

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

Page 14 states *“evaluating the range of motion of an extremity or the spine is a valid method of estimating an impairment. To some extent, however, the ROM is subject to the patient’s control. The results of such evaluations should be consistent and concordant with the presence or absence of pathologic signs and other evidence.”*

Range of Motion

Section 3.2e: Range of Motion

This is supported by evidence elsewhere in the Guides.

- *"Active range of motion is determined with the patient's full effort and cooperation." (page 14)*
- *"Comparing the patient's active range of motion with the passive range of motion provides useful information." (page 14)*

Range of Motion

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

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

Don't take the measurements obtained during your exam at face value.

Range of Motion

Appeals Panel Decision 132734, filed 01/09/14

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

Range of Motion

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

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

Range of Motion

MEASURING HIP ROM – Correct methods

- The AMA Guides, Figure 52, page 90 Using a Goniometer to Measure Flexion of the Right Hip, the figure shows an incorrect method for measuring flexion contracture (c).
- The next slide is a copy of Figure 52, altered in red to show correct goniometer placement to measure flexion contracture.
- There is also a slide with an additional drawing (not from the Guides) showing how to measure extension.

Range of Motion

Figure 52. Using a Goniometer to Measure Flexion of the Right Hip.

- (a) Goniometer is placed at the right hip, and the pelvis is locked in the neutral position by flexing the left hip until the lumbar spine is flat.
- (b) Patient flexes the right hip until the anterior superior iliac spine begins to move, when the angle is recorded.
- (c) To measure loss of extension of the right hip, the left hip is flexed until the lumbar spine is flat on the examining table, as determined by the examiner's hand, which is placed between the lumbar spine and table surface. The right thigh should rest flat on the table; any right hip flexion is recorded as a flexion contracture.

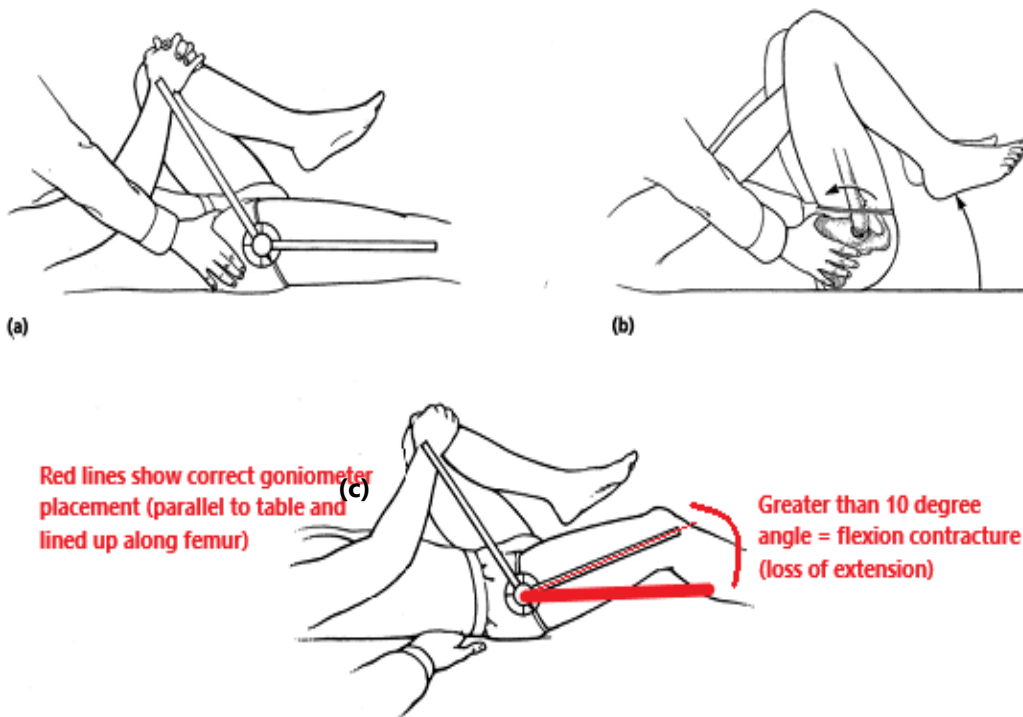
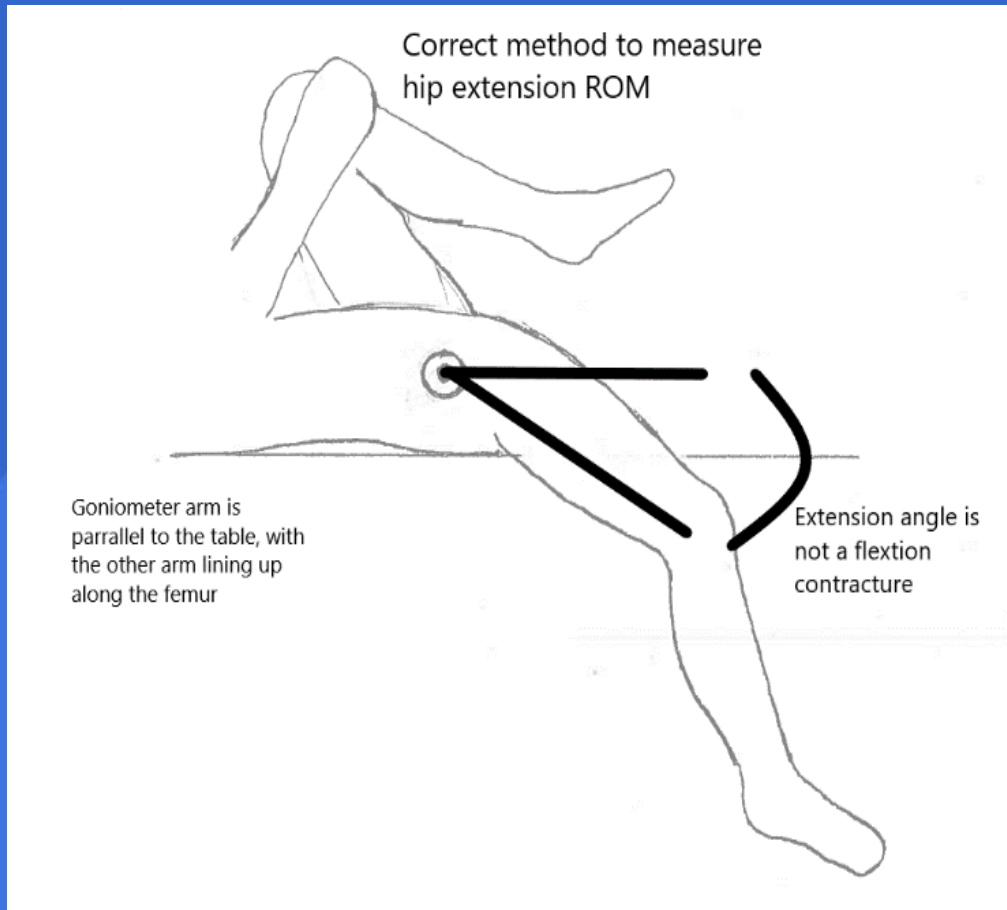


Figure 52, altered in red to show correct goniometer placement to measure flexion contracture.

(c) Primary goniometer arm is parallel to the table. The measuring arm lines up with / is parallel to the femur.

Range of Motion



Additional drawing (not from the Guides) showing how to measure extension. Hip extension does not accrue impairment.

Ensure the lumbar spine remains flat on the table, just as you do for measuring flexion contracture.

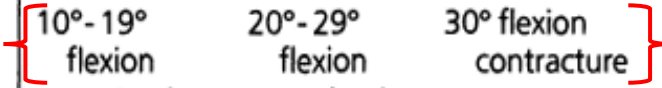
Range of Motion

The AMA Guides, Table 40, Hip Motion Impairments, can be confusing and lead to disputes.

Table 40. Hip Motion Impairments.

Motion	Whole-person (lower extremity) impairment (%)		
	Mild: 2% (5%)	Moderate: 4% (10%)	Severe: 8% (20%)
Flexion	Less than 100°	Less than 80°	Less than 50°
Extension	10°- 19° flexion contracture	20°- 29° flexion contracture	30° flexion contracture
Internal rotation	10°- 20°	0°- 9°	
External rotation	20°- 30°	0°- 19°	
Abduction	15°- 25°	5°- 14°	Less than 5°
Adduction	0°- 15°	—	—
Abduction contracture*	0°- 5°	6°- 10°	11°- 20°

*An abduction contracture of greater than 20° is a 15% whole-person impairment.



Range of Motion

The word extension is listed on the left side of the table, however, hip extension does not accrue impairment.

Table 40. Hip Motion Impairments.

Motion	Whole-person (lower extremity) impairment (%)		
	Mild: 2% (5%)	Moderate: 4% (10%)	Severe: 8% (20%)
Flexion	Less than 100°	Less than 80°	Less than 50°
Extension	10°- 19° flexion contracture	20°- 29° flexion contracture	30° flexion contracture
Internal rotation	10°- 20°	0°- 9°	
External rotation	20°- 30°	0°- 19°	
Abduction	15°- 25°	5°- 14°	Less than 5°
Adduction	0°- 15°	—	—
Abduction contracture*	0°- 5°	6°- 10°	11°- 20°

*An abduction contracture of greater than 20° is a 15% whole-person impairment.

Impairment for EXTENSION LOSS is measured and rated based on the presence and degree of flexion contracture. The ratable degrees of flexion contracture are given on the right side of the table.

Range of Motion

Documenting Hip ROM - Best practice:

- If there IS NO **flexion contracture**, explain that the absence of flexion contracture results in 0% impairment per Table 40.
- If there IS a **flexion contracture**, provide the measurement finding, and explain the percent of impairment assigned per Table 40.
- **If you include any measurement finding of extension, clearly explain that any degree of extension is inconsistent with a flexion contracture and is not assigned an impairment rating per Table 40.**

Ankylosis

Section 3.2f: Ankylosis – Tables 40 to 45

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

Ankylosis

Section 3.2f: Ankylosis – Tables 40 to 45

- Follow instructions at the bottom of the relevant Tables for the hip and knee.
- The Tables 46 to 50 for the hip and Tables 51 – 54 for the knee have footnotes that state *"The appropriate ankylosis impairment is ADDED to the impairment percent for the ankylosis in the neutral position from the text"*.
- The text on page 79 for the hip states, *"impairment estimates for extension, abduction and adduction are COMBINED"*.

Ankylosis

Section 3.2f: Ankylosis – Tables 40 to 45

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

Ankylosis

Section 3.2f: Ankylosis – Base for:

Hip = 20% WPI

[25 – 40 degrees of flexion + neutral EX/IR/ER/ADD/ABD]

Knee = 27% WPI

[10 – 15 degrees of flexion with good alignment]

Ankle = 4% WPI

[Neutral without FLEX / EXT / VARUS / VALGUS]

Foot = 4 % WPI (Hindfoot, Midfoot, Forefoot)

[Subtalar neutral is 0 degrees without VARUS / VALGUS]

Arthritis

Section 3.2g: Arthritis – Table 62

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

Arthritis

Section 3.2g: Arthritis – Table 62

- Don't forget the footnote of Table 62
- *“In a patient with a history of direct trauma, a complaint of patellofemoral pain, and crepitation on physical examination, but without joint space narrowing on roentgenograms, a 2% whole person or 5% lower extremity impairment is given.”*
- This impairment could be applicable for injuries such as falls onto the knee, dashboard impact injuries, or blunt force trauma (hit in the knee with a sledgehammer)
- **If clinically appropriate can be combined with DBE (ligamentous laxity, meniscus, fracture, etc.)**

Rating Hip and Knee Replacements

- Familiarize yourself with what questions to ask during the examination
- Correlate your findings with observed behaviors
- Order additional testing if need for alignment determination
- Utilize Table 65 for hip and Table 66 for knee
- Score the outcome and THEN apply that number to the Total Knee section on Table 64
- An impairment for a “good”, “fair”, or “poor” result is based on the structural outcome.

Rating Hip Replacement

Table 65, page 87

	No. of points
a. Pain	
None	44
Slight	40
Moderate, occasional	30
Moderate	20
Marked	10

Rating Hip Replacements

- Section a. for PAIN, b. for FUNCTION and c. for ACTIVITIES are mostly based on **self-report**.
- The points for these 3 sections range from 10 at the least up to 90 at the best.
- The points for just Section a. Pain ranges from 10 at the worst to 44 at the best.
- The OBJECTIVE findings of d. DEFORMITY and e. ROM total only up to 9 points at best.
- Therefore it is imperative to VERIFY that the self reports are consistent with your exam and the other information in the records.

Rating Hip Replacement

Table 65, page 87

b. Function	
Limp	
None	11
Slight	8
Moderate	5
Severe	0
Supportive device	
None	11
Cane for long walks	7
Cane	5
One crutch	3
Two canes	2
Two crutches	0
Distance walked	
Unlimited	11
Six blocks	8
Three blocks	5
Indoors	2
In bed or chair	0

Rating Hip Replacement

Table 65, page 87

c. Activities	
Stairs climbing	
Normal	4
Using railing	2
Cannot climb readily	1
Unable to climb	0
Putting on shoes and socks	
With ease	4
With difficulty	2
Unable to do	0
Sitting	
Any chair, 1 hour	4
High chair	2
Unable to sit comfortably	0
Public transportation	
Able to use	1
Unable to use	0

Rating Hip Replacement

Table 65, page 87

d. Deformity	
Fixed adduction	
<10°	1
≥10°	0
Fixed internal rotation	
<10°	1
≥10°	0
Fixed external rotation	
<10°	1
≥10°	0
Flexion contracture	
<15°	1
≥15°	0
Leg length discrepancy	
<1.5 cm	1
≥1.5 cm	0

Rating Hip Replacement

Table 65, page 87

e. Range of Motion	
Flexion	
>90°	1
≤90°	0
Abduction	
>15°	1
≤15°	0
Adduction	
>15°	1
≤15°	0
External rotation	
>30°	1
≤30°	0
Internal rotation	
>15°	1
≤15°	0



Rating Hip Replacement

Table 65, page 87

* Add the points from categories a, b, c, d, and e to determine the total and characterize the result of replacement. Source: modified from refs. 42 and 43.

Rating Hip Replacement

Table 64, page 85

Hip	
Total hip replacement; includes endoprosthesis, unipolar or bipolar	
Good result, 85-100 points*	15 (37)
Fair result, 50-84 points*	20 (50)
Poor result, less than 50 points*	30 (75)

*See Table 65 (p. 87) or Table 66 (p. 88) for point rating system.

Questions about rating hip replacement?



Rating Knee Replacement

Table 66, page 88

Table 66. Rating Knee Replacement Results*

	No. of points
a. Pain	
None	50
Mild or occasional	45
Stairs only	40
Walking and stairs	30
Moderate	
Occasional	20
Continual	10
Severe	0
b. Range of motion	
Add 1 point per 5°	25
c. Stability (maximum movement in any position)	
Anteroposterior	
<5 mm	10
5-9 mm	5
>9 mm	0
Mediolateral	
5°	15
6°-9°	10
10°-14°	5
≥15°	0
Subtotal	

d. Deductions (minus)	
Flexion contracture	
5°-9°	2
10°-15°	5
16°-20°	10
>20°	20
e. Extension lag	
<10°	5
10°-20°	10
>20°	15
f. Alignment	
0°-4°	0
5°-10°	3 points per degree
11°-15°	3 points per degree
>15°	20
Deductions subtotal	—

*The point total for estimating knee replacement results is the sum of the points in categories a, b, and c minus the sum of the points in categories d, e, and f. Modified from ref. 44.

Rating Knee Replacement

Table 66, page 88

The point total for estimating knee replacement results is the sum of the points in categories a, b, and c minus the sum of the points in categories d, e, and f.

Rating Knee Replacement Best Practice - ROM

Remember the maximum value per Table 66

- One point per 5°
- ROM of 125° = 25 points
 - **25 points is maximum value**



Rating Knee Replacement Flexion Contracture vs. Extension Lag

- **Flexion contracture** = fixed = passive ROM
 - knee cannot be fully extended either actively or passively
- **Extension lag** = not fixed = active ROM
 - knee cannot be fully extended actively; but passively, more extension may be possible

Rating Knee Replacement Best Practice - Alignment

- $0^{\circ} - 4^{\circ} = 0$ points
- $5^{\circ} - 15^{\circ} = 3$ points per degree
- $>15^{\circ} =$ add 20 points
- **SEE TABLE next slide**

Rating Knee Replacement Best Practice - Alignment

5° = 3 points
6° = 6 points
7° = 9 points
8° = 12 points
9° = 15 points
10° = 18 points

11° = 21 points
12° = 24 points
13° = 27 points
14° = 30 points
15° = 33 points
>15° = 53 points*

Questions about rating knee replacement?



Amputation

Section 3.2h: Amputation: Table 63

- Table 63 is straightforward – rate the level of the amputation.
- This table can be referenced to give an idea of what a maximum impairment should be for injuries at different levels of the leg.

Skin Loss

Section 3.2j: Skin Loss: Table 67

- Full-thickness skin loss about certain areas in the lower extremity results in significant impairment even when the areas are successfully covered with skin graft
- Table 67 provides impairment values for skin loss in the lower extremity.
- Note that these are VERY specific to situations such as decubitus ulcers and osteomyelitis.
- Seems obvious, but don't use for burns! Burns of the lower extremity (or any area) should be rated as per Chapter 13

Skin Loss

Table 67. Impairments for Skin Loss.

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

Diagnosis-Based Estimates

Section 3.2i: Diagnosis-Based Estimates - Table 64

- Diagnosis-based estimates are stand alone impairments
- Diagnosis-based estimates are utilized for specific types of fractures, ligamentous injuries, joint replacements, deformities, and meniscus procedures

Diagnosis-Based Estimates

Section 3.2i: Diagnosis-Based Estimates - Table 64

- Per the Guides, *“The physician, in general, should decide which estimate best describes the situation and should use only one approach for each anatomic part.”*
- Diagnosis-based estimates are not combined with impairments from atrophy or range of motion as the DBE takes into account any atrophy or range of motion loss. (pages 78, 81, 84)

Peripheral Nerve Injuries

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

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

Peripheral Nerve Injuries

Table 68. Impairments from Nerve Deficits.

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



Peripheral Nerve Injuries

- **Not all nerve lesions are COMPLETE.**
- When there is an incomplete lesion there are a couple of options for assigning impairment.
- Chapter 3 method
- Chapter 4 method

Peripheral Nerve Injuries

- **Chapter 3 Method – Section 3.2k.**
- **Partial motor loss MAY be rated on the basis of manual muscle testing per Section 3.2d:**
 - Table 39, page 77
 - Text on page 76
- Motor findings **MUST** be *"reproducible and consistent"*
- **EXAMPLE:** Partial motor loss for 4/5 ankle eversion = 2% WP
 - Section 3.2d, Table 39, page 77
- This methodology does not apply to a partial sensory loss, so another methodology would have to be utilized for sensory loss

Peripheral Nerve Injuries

- **Chapter 4 Method** for Determination of Partial Loss
- The Nervous System - pages 150 and 151
- Similar to UE methodology on pages 48 and 49.
- **Consider this section when partial motor and/or sensory nerve loss is present where applicable (i.e. when there is a named sensory / motor nerve in Table 68)**

Peripheral Nerve Injuries

Chapter 4 Method

- Determine appropriate peripheral nerve involved
- Take WP value from Chapter 3, Table 68, page 89 for **complete** motor or sensory loss
- Multiply value for complete motor loss (Table 68) by the grade of the partial loss for motor deficit
 - Chapter 4, Table 21, page 151
- Multiply value for complete sensory loss (Table 68) by the grade of the partial loss for sensory deficit
 - Chapter 4, Table 20, page 151
- Combine partial motor % WP with partial sensory % WP
 - Combined Values Chart, page 322

Peripheral Nerve Injuries

- TABLE 68 (page 89)
 - Errors of OMISSION
 - Errors based on INCORRECT information
- Refer to Figures 59 and 60 on Page 93
- If a value is not in the figure or table an impairment cannot be assigned.
- DO NOT just make up a value!
- Explain in your report that even though a nerve deficit is present, the Guides do not provide an impairment value.

Peripheral Nerve Injuries

- TABLE 68 (page 89)
 - Errors based on OMISSIONS
 - **Saphenous** extension of the femoral (sensory) on the medial lower leg
 - **Tibial** after it splits from the sciatic nerve at the popliteal region (sensory AND motor)
 - **Deep peroneal** (sensory AND motor)
- May use the Table 39 method for the omissions of motor nerves

Peripheral Nerve Injuries- Omissions

Table 68. Impairments from Nerve Deficits.

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



Peripheral Nerve Injuries - Incorrect

- Chapter 3 Method – Section 3.2k.
- TABLE 68 (page 89)
 - Errors based on INCORRECT information
 - **Superficial peroneal**
 - Motor to peroneal muscles is not noted
 - **Obturator**
 - Sensory innervation of the medial thigh is not noted

Peripheral Nerve Injuries - Errors

Table 68. Impairments from Nerve Deficits.

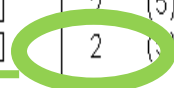
Nerve	Whole-person (lower extremity) [foot] impairment (%)		
	Motor	Sensory	Dysesthesia
Femoral	15 (37)	1 (2)	3 (7)
Obturator	3 (7)	0	0
Superior gluteal	25 (62)	0	0
Inferior gluteal	15 (37)	0	0
Lateral femoral cutaneous	0	1 (2)	3 (7)
Sciatic	30 (75)	7 (17)	5 (12)
Common peroneal	15 (42)	2 (5)	2 (5)
Superficial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

Peripheral Nerve Injuries - Table 39

USE TABLE 39 WHEN TABLE 68 DOES NOT HAVE
A MOTOR NERVE LISTED

Table 39. Impairments from Lower Extremity Muscle Weakness.

Muscle group		Whole-person (lower extremity) [foot] impairment (%)				
		Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Hip	Flexion	6 (15)	6 (15)	6 (15)	4 (10)	2 (5)
	Extension	15 (37)	15 (37)	15 (37)	15 (37)	7 (17)
	Abduction*	25 (62)	25 (62)	25 (62)	15 (27)	10 (25)
Knee	Flexion	10 (25)	10 (25)	10 (25)	7 (17)	5 (12)
	Extension	10 (25)	10 (25)	10 (25)	7 (17)	5 (12)
Ankle	Flexion (plantar flexion)	15 (37) [53]	15 (37) [53]	15 (37) [53]	10 (25) (35)	7 (17) [24]
	Extension (dorsiflexion)	10 (25) [35]	10 (25) [35]	10 (25) [35]	10 (25) [35]	5 (12) [17]
	Inversion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]
	Eversion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]
Great toe	Extension	3 (7) [10]	3 (7) [10]	3 (7) [10]	3 (7) [10]	1 (2) [3]
	Flexion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]



*Hip adduction weakness is evaluated as an obturator nerve impairment (Table 68, p. 89).

Peripheral Nerve Injuries – Table 39

USE TABLE 39 WHEN TABLE 68 DOES NOT HAVE A MOTOR NERVE LISTED

Table 39. Impairments from Lower Extremity Muscle Weakness.

Muscle group		Whole-person (lower extremity) [foot] impairment (%)				
		Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Hip	Flexion	6 (15)	6 (15)	6 (15)	4 (10)	2 (5)
	Extension	15 (37)	15 (37)	15 (37)	15 (37)	7 (17)
	Abduction*	25 (62)	25 (62)	25 (62)	15 (27)	10 (25)
Knee	Flexion	10 (25)	10 (25)	10 (25)	7 (17)	5 (12)
	Extension	10 (25)	10 (25)	10 (25)	7 (17)	5 (12)
Ankle	Flexion (plantar flexion)	15 (37) [53]	15 (37) [53]	15 (37) [53]	10 (25) (35)	7 (17) [24]
	Extension (dorsiflexion)	10 (25) [35]	10 (25) [35]	10 (25) [35]	10 (25) [35]	5 (12) [17]
	Inversion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) (17)	2 (5) [7]
	Eversion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) (17)	2 (5) [7]
	Great toe	Extension	3 (7) [10]	3 (7) [10]	3 (7) [10]	3 (7) [10]
	Flexion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]

Ex. A SCIATIC NERVE INJURY WITH PARTIAL REINNERVATION AND INTACT HAMSTRINGS BUT WEAK IN THE POSTERIOR TIBIAL NERVE DISTRIBUTION

Causalgia/RSD

Section 3.2L Causalgia / RSD - See page 56

- **CRPS Type I (sensory / distal)**

Table 68 x Table 11

- **CRPS Type II (proximal / mixed sensory and motor)**

Table 68 x table 11

Table 68 x table 12

Causalgia/RSD

Section 3.2L Causalgia / RSD - See page 56

- If there is evidence of stiffness (due to edema in the acute phase or end stage dystrophic CRPS), then ROM of the affected area should also be measured and all combined
- If ROM is limited due to **pain inhibition**, and loss is inconsistent with degree of edema, or atrophy or other dystrophic changes, then that would already be accounted for in descriptors of higher grades of sensory loss on Table 11 (UE) or Table 20 (LE)
- [Example: Grade 4 = *“which may prevent activity, and / or causalgia”*]

Vascular Disorder

3.2M Vascular Disorder – Table 69

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

**Let's take a short break
before we start Case I**



MMI/IR – Lower Extremity Case 1

History of Injury

- 35-year-old construction worker that stepped in a hole, twisted his right knee, and “heard a pop”
- Immediate right knee pain
- Difficulty bearing weight and walking
- Seen at urgent care the day of the injury
- Diagnosed with knee sprain

MMI/IR – Lower Extremity Case 1

Treatment History

- Initial treatment included rest, ice, compression, elevation, and ibuprofen
- Was placed on restricted duty
- Returned for follow up with treating doctor 1 week after the injury
- Reported no improvement with persistent swelling and loss of range of motion
- Referred to physical therapy

MMI/IR – Lower Extremity Case 1

Treatment History (cont'd)

- Participated in 8 sessions of PT over 4 weeks
- Treatment consisted of e-stim, ultrasound, heat, and manual therapy
- Returned to treating doctor at urgent care 5 weeks after injury
- Reported no change with PT. Continued complaints of knee pain, popping, and the feeling like his knee “wants to give way”
- Treating doctor referred him for an MRI

MMI/IR – Lower Extremity Case 1

Treatment History (cont'd)

- MRI performed 6 weeks post injury showed a medial meniscus tear and near full thickness tear of the ACL
- Referred to an orthopedic surgeon who recommended arthroscopic partial medial meniscectomy and ACL reconstruction
- Carrier denied the recommended surgical intervention
- Carrier accepted injury as “knee sprain” only

MMI/IR – Lower Extremity Case 1

Treatment History (cont'd)

- Returned to treating doctor who ordered additional PT
- Completed 16 visits of active therapy 10 weeks post injury
 - Less swelling
 - Improved range of motion
 - Better strength
 - Improved functional activity
- Returned to work but was unable to perform duties such as ladder climbing, wheel barrow use, and extended standing
- Reported his knee continued to “give way”

MMI/IR – Lower Extremity Case 1

Treatment History (cont'd)

- Returned to orthopedic surgeon 16 weeks post injury, surgery was again recommended and was approved by the carrier
- Arthroscopic ACL reconstruction and partial medial meniscectomy performed at 18 weeks post injury
- Post operative physical therapy started at 20 weeks post injury
- Completed 18 visits of post-operative PT 30 weeks post injury

MMI/IR – Lower Extremity Case 1

PT re-evaluation at 30 weeks post injury

- Therapy re-evaluation findings
 - active knee ROM 125° to -5°
 - flexion contracture -5°
 - findings in medical records
 - resisted knee flexion right 30#, left 35#
 - unable to full unilateral weight bear
 - unable to hold half squat on right leg
 - complains of pain in right knee
 - complains of intermittent swelling
- Additional PT requested but denied by carrier

MMI/IR – Lower Extremity Case 1

DD Medical History – 36 weeks post injury

- Has returned to work with restrictions per treating doctor, and reports he can perform most of his duties
- Complains of knee pain at the end of the work day
- Using NSAIDs as needed for pain control
- Feels like his “thigh is really weak”
- Scheduled to see the orthopedic surgeon next week
- Reports no recent give way episodes





MMI/IR – Lower Extremity Case 1

DD Physical Exam – 36 Weeks Post Injury

- Stable vital signs, height 6 feet 1 inch, weight 180 pounds
- Right knee shows healed surgical scar and arthroscopic portals
- Gait shows slightly shortened swing and stance phase on right, but no assistive device used

MMI/IR – Lower Extremity Case 1

DD Physical Exam – 36 Weeks Post Injury (cont'd)

- No obvious swelling or effusion
- Atrophy of right quadriceps
 - right thigh circumference 51 cm
 - left thigh circumference 53 cm
- 4+/5 strength of right knee extension and flexion
- Right knee ROM extension -5° and flexion 100°

MMI/IR – Lower Extremity Case 1

Based on medical records and physical examination of injured employee, what is the compensable injury for certifying MMI and IR?

130.1(c)(3)



MMI/IR – Lower Extremity Case 1

Question for DD to consider in the exam:

Has MMI been reached?

If so, on what date?

(May not be greater than statutory MMI date shown on DWC Form-032)



MMI/IR – Lower Extremity Case 1

Has MMI been reached?

If so, on what date?

- A. Yes, 4 weeks post injury, date completed initial PT
- B. Yes, 30 weeks post injury, date of post op PT re-evaluation
- C. Yes, 36 weeks post injury, date of DD exam
- D. No, not at MMI



Questions about MMI/IR?





MMI/IR – Lower Extremity Case 1 The Sequel

DD Medical History – 48 Weeks Post Injury

- Injured employee returns for subsequent DD exam 3 months later after 10 additional post-op PT sessions and home based exercise plan
- Released to work without restrictions at 38 weeks at IE's request

MMI/IR – Lower Extremity Case 1

The Sequel

DD Medical History – 48 Weeks Post Injury

- PT discharge at 44 weeks post injury
- Records at PT discharge
 - good progress with PT
 - 5/5 right LE strength
 - extension to 0° and flexion 135°
 - continues his HEP and gym program

MMI/IR – Lower Extremity Case 1

The Sequel

DD Medical History – 48 weeks post injury (cont'd)

- Is currently working in a warehouse performing order fulfillment
- Operates a stand up forklift 8 hours a day
- Reports minimal right knee pain with resisted knee flexion activities such as going up steps, which he rates as “1/10”





MMI/IR – Lower Extremity Case 1

The Sequel

DD Physical Exam – 48 weeks post injury (cont'd)

- Well-healed surgical scars
- No right knee swelling or effusion
- No weakness to right quad set
- Manual muscle testing shows 5/5 strength to right knee flexion and extension

MMI/IR – Lower Extremity Case 1

The Sequel

DD Physical Exam – 48 weeks post injury (cont'd)

- Mildly positive anterior drawer
- 1+ Lachman's
- Right knee ROM
 - extension 0°
 - flexion 140°
- No atrophy
 - both thighs circumferences measure 53 cm

MMI/IR – Lower Extremity Case 1

The Sequel

Based on medical records and physical examination of injured employee, what is compensable injury for certifying MMI and IR?



130.1(c)(3)

MMI/IR – Lower Extremity Case 1

The Sequel

Compensable injury for certifying MMI and IR

- Traumatic ACL sprain / tear
- Medial meniscus tear



MMI/IR – Lower Extremity Case 1

The Sequel

Question for DD to consider in the exam:

Has MMI been reached?

If so, on what date?

(May not be greater than statutory MMI date shown on DWC Form-032)



MMI/IR – Lower Extremity Case 1

The Sequel

Has MMI been reached?
If so, on what date?

- A. Yes, 38 weeks post injury, when he requested to be released to full duty
- B. Yes, 44 weeks post injury, date discharged from PT
- C. Yes, 48 weeks post injury, date of subsequent DDE
- D. No, not at MMI



MMI/IR – Lower Extremity Case 1

The Sequel

Question for DD to consider in the exam:

On MMI date, what is whole person IR?



MMI/IR – Lower Extremity Case 1

The Sequel

On the date of MMI, what is whole person IR?

- A. 0%
- B. 1%
- C. 3%
- D. 4%



MMI/IR – Lower Extremity Case 1

The Sequel

Which of the 13 methods apply?

- A. Range of Motion (ROM)
- B. Diagnosis-Based Estimate (DBE)



**Right Knee ROM
extension 0°
flexion 140°**

**ROM
measurements
accrue 0 %
WPI**

Table 41. Knee Impairment.

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

DBE
Table 64,
Page 85

1 % c/w 3 %
=
4 % WPI

Region and condition	Whole-person (lower extremity) impairment (%)
Knee	
Patellar subluxation or dislocation with residual instability	3 (7)
Patellar fracture	
Undisplaced, healed	3 (7)
Articular surface displaced more than 3 mm	5 (12)
Displaced with nonunion	7 (17)
Patellectomy	
Partial	3 (7)
Total	9 (22)
Meniscectomy, medial <i>or</i> lateral	
Partial	1 (2)
Total	3 (7)
Meniscectomy, medial <i>and</i> lateral	
Partial	4 (10)
Total	9 (22)
Cruciate <i>or</i> collateral ligament laxity	
Mild	3 (7)
Moderate	7 (17)
Severe	10 (25)
Cruciate <i>and</i> collateral ligament laxity	
Moderate	10 (25)
Severe	15 (37)



MMI/IR – Lower Extremity Case 1

ADDITIONAL SCENARIOS

Let's consider some additional cases / scenarios that modify some of the factors of the claim, that could affect the condition at MMI.

This is an important exercise to recognize that each case has unique facts and potential co-morbidities or non-injury related factors that may affect the impairment assessment.

MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 1

Condition at MMI

- ROM
 - extension 0°
 - flexion 105°
- Partial medial meniscectomy
- No cruciate ligament laxity

MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 1

What is the whole person IR?



MMI/IR – Lower Extremity Case 1 The Sequel Additional Scenario 1

What is whole person IR?

- ROM = 4% WP
- DBE = 1% WP
 - partial medial meniscectomy
- Can you combine ROM and DBE?
- **Total IR = 4% WP**
 - use larger value, page 84



MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 2

Condition at MMI

- ROM
 - extension 0°
 - flexion 130°
- No cruciate ligament laxity
- DD notes that operative note describes surgical procedure as “*arthroscopic medial meniscus repair and ACL reconstruction*”

MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 2

What is the whole person IR?



MMI/IR – Lower Extremity Case 1 The Sequel Additional Scenario 2

What is whole person IR?

- ROM = 0% WP
- DBE = 0% WP
 - No laxity
 - No impairment rating for meniscal repair
- **Total IR = 0% WP**



MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 3

Condition at MMI

- ROM
 - extension (flexion contracture) -5°
 - flexion 100°
- No cruciate ligament laxity
- DD notes that operative note describes surgical procedure as “*arthroscopic partial medial meniscectomy and ACL reconstruction*”

MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 3

What is the whole person IR?



ROM

Flexion 100°

Extension -5°
(flexion contracture)

More than 1 motion?

What do APDs say?

Table 41. Knee Impairment.

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

MMI/IR – Lower Extremity Case 1 The Sequel Additional Scenario 3

- What is whole person IR?
 - ROM = 4% or 8% WP
 - per APD 132734 (one or both ROM)
 - DBE = 1% WP
 - partial medial meniscectomy
 - **Total IR = 4% or 8% WP**
 - **Explain your decision**



MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 4

Condition at MMI

- Moderate knee OA (no change from pre-op). Antalgic gait with normal stance phase, and does not require cane or bracing.
- ROM
 - Flexion 120°, extension 0°
- No cruciate ligament laxity
- 1 cm of right thigh atrophy
- DD notes that operative note describes surgical procedure as “*arthroscopic partial medial meniscectomy and ACL reconstruction*”

MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 4

So ... What is the
whole person IR?



MMI/IR – Lower Extremity Case 1 The Sequel Additional Scenario 4

- What is whole person IR?
 - ROM = 0% WP
 - DBE = 1% WP meniscus
 - Atrophy = 1% - 2% WP
 - Gait = ???
- **Total IR = 1 - 2% WP**
- Explain how and why



MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 5

Condition at MMI

- Moderate knee OA. Antalgic gait with normal stance phase, and does not require cane or bracing.
- Pre-op radiographic cartilage interval (RCA) medially was 4 mm.
- RCA at MMI was 2 mm
- ROM
 - flexion 120°, extension 0°
- No cruciate ligament laxity
- 1 cm of right thigh atrophy
- DD notes that operative note describes surgical procedure as “*arthroscopic partial medial meniscectomy and ACL reconstruction*”

MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 5

So ... What is the
whole person IR?



MMI/IR – Lower Extremity Case 1 The Sequel Additional Scenario 5

- What is whole person IR?
 - ROM = 0% WP
 - DBE = 1% WP
 - Atrophy = 1% - 2% WP
 - RCI = 8 % WP
 - Gait = ???
- **Total IR = 8% WP**
- Explain how and why



MMI/IR – Lower Extremity Case 1

The Sequel Additional Scenario 6

Condition at MMI

- Gait antalgic, but near full extension of the affected knee
- Could sit on the table with knee to 90 degrees and passive ROM during McMurray's testing was greater than 110 degrees
- No atrophy
- ROM
 - Extension -20° (not a contracture based on passive ROM NORMAL)
 - flexion 75° , inhibited by "pain"
- Partial medial meniscectomy
- No cruciate ligament laxity

MMI/IR – Lower Extremity Case 1 The Sequel Additional Scenario 6

- What is whole person IR?
 - ROM = 0% WP = NOT VALID
 - DBE = 1% WP based on partial MM.
 - Atrophy = 0 % WP
- **Total IR = 1% WP**
- Explain that the ROMs were inconsistent with the passive ROM and functional activities



Questions About MMI/IR LE Case 1 and the Additional Scenarios?





MMI/IR – Lower Extremity Case 2

History of Injury

- 25-year-old laborer sustained an isolated non-displaced left proximal to mid-shaft lateral fibular fracture, with injury to the superficial peroneal nerve

MMI/IR – Lower Extremity Case 2

Treatment History

- Seen in ER
 - X-rays and CT show isolated non-displaced mid to distal fibular fracture
 - Orthopedic surgeon treated with a boot
- Developed numbness over the dorsum of the foot
- Weakness in the ankle everter muscles

MMI/IR – Lower Extremity Case 2

Treatment History (cont'd)

- **8-18 weeks post injury**
 - 24 visits of PT
- **16 weeks post injury**
 - Follow-up x-rays showed healed fracture
- Orthopedic surgeon **24 weeks post injury**
 - Minimally decreased ankle ROM
 - Ankle eversion 4/5 all other muscles 5/5
 - Released RTW with restrictions
 - 3 month follow-up to evaluate nerve healing

MMI/IR - Lower Extremity Case 2

DD Medical History - 36 Weeks Post Injury

- Left lower leg pain “2-3/10”
 - chief complaint
- Was working full time with restrictions for 12 weeks, then without restrictions for the last 2 weeks.





MMI/IR - Lower Extremity Case 2

DD Physical Exam- 36 Weeks Post Injury

- Vitals: Height 66 inches, weight 140 pounds, BP 120/78, pulse 64, respiration 14
- Walks without limp
- Does not require use of assistive device to walk

MMI/IR - Lower Extremity Case 2

DD Physical Exam - 36 Weeks Post Injury (cont'd)

- Decreased sensation dorsum of the left foot that is forgotten with activity
- No abnormal or painful sensation
- Manual muscle testing shows 4/5 strength of ankle eversion
- Ankle plantar flexion, dorsiflexion, and inversion are 5/5

MMI/IR - Lower Extremity Case 2

DD Physical Exam - 36 Weeks Post Injury (cont'd)

- Bilaterally symmetric calf and thigh circumference
- Knee Flexion 120° and extension 0°
- Plantar flexion 30° and dorsiflexion 12°
- Inversion 25° and eversion 15°

MMI/IR – Lower Extremity Case 2

Based on medical records and physical examination of injured employee, what is compensable injury for certifying MMI and IR?

130.1(c)(3)



MMI/IR – Lower Extremity Case 2

The compensable injury is:

- Non-displaced left lateral malleolar fracture
- Injury to superficial peroneal nerve



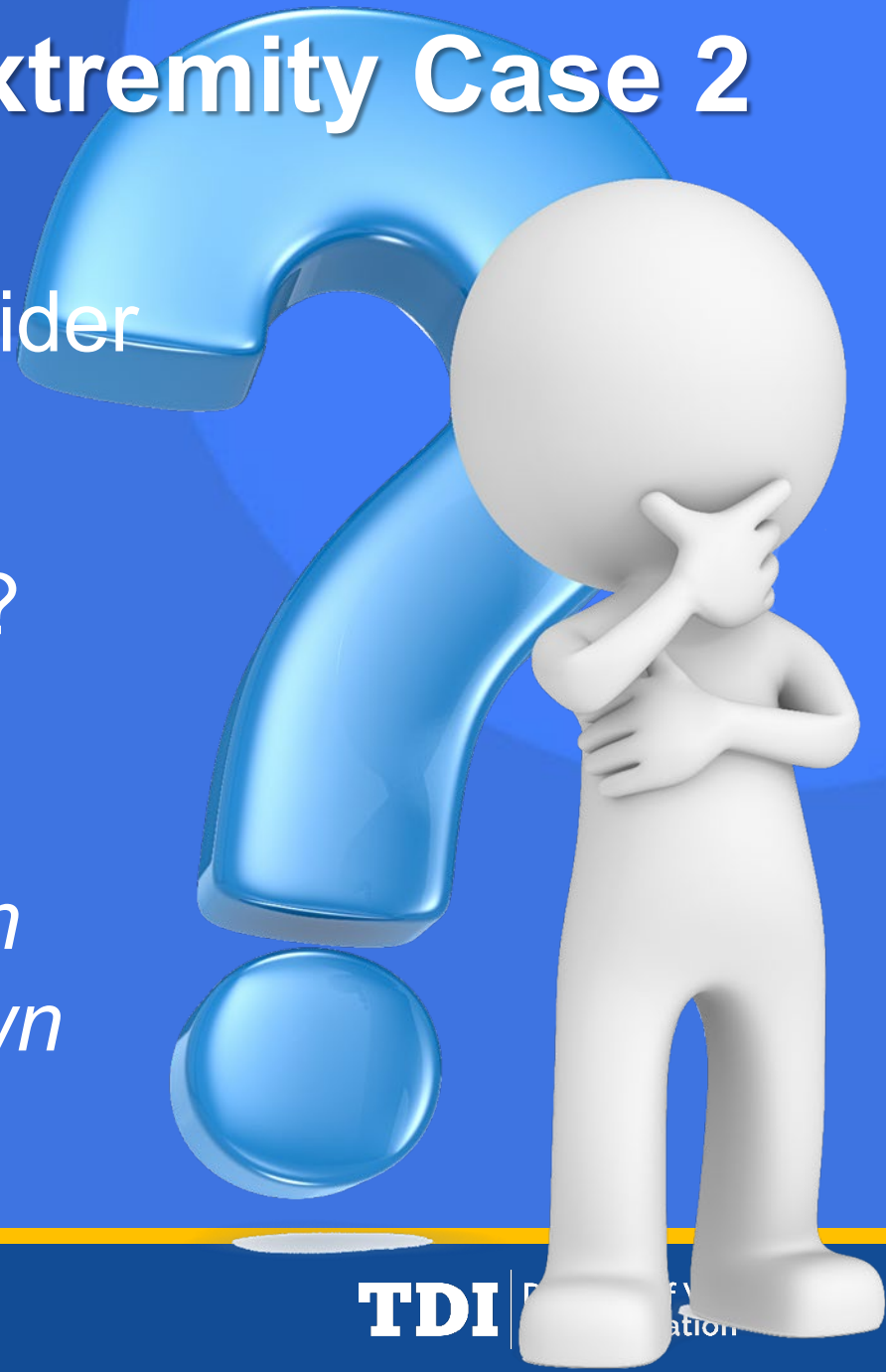
MMI/IR – Lower Extremity Case 2

Question for DD to consider
in the exam:

Has MMI been reached?

If so, on what date?

*(May not be greater than
statutory MMI date shown
on DWC Form-032)*



MMI/IR – Lower Extremity Case 2

**Has MMI been reached?
If so, what date?**

- A. Yes, 18 weeks post injury, date completed 24 visits PT
- B. Yes, 24 weeks post injury, date last saw orthopedic surgeon
- C. Yes, 36 weeks post injury, date of DD exam
- D. No, not at MMI



MMI/IR – Lower Extremity Case 2

Question for DD to consider in the exam:

On MMI date, what is whole person IR?

Show your work!



MMI/IR – Lower Extremity Case 2

On date of MMI, what is whole person IR?

A.0%

B.1%

C.2%

D.3%



MMI/IR - Lower Extremity Case 2

Which of 13 methods apply?

- Ankle / Hindfoot ROM
 - One motion within each joint vs. more than one motion within each joint
 - Appeals Panel Decision 132734 finds it is up to the DD's discretion
 - 0% either method
- Knee ROM
 - 0% either method



MMI/IR - Lower Extremity Case 2

Which of 13 methods apply?

- What about DBE?
 - none
 - non-displaced lateral malleolar fracture
 - see page 86 (not addressed)
- If there was a DBE, could you combine DBE and ROM?



MMI/IR - Lower Extremity Case 2

Which of 13 methods apply?

- Peripheral Nerve (Superficial Peroneal nerve)
 - 3 Methods
 - Chapter 3
 - Chapter 4
 - HYBRID
- **BOTH NERVE & ROM APPLY – Different Organ Systems**
- *Let's review the nerve methods!*



Peripheral Nerve Injuries

- Chapter 3 Method for Determination of PARTIAL LOSS
- **IN THIS CASE: Partial motor loss for 4/5 ankle eversion**
 - 2% WP
 - Section 3.2d, Table 39 for WEAKNESS on page 77
- This method alone does not account for partial sensory loss - would have to use another methodology.

Peripheral Nerve Injuries – This case

USE WHEN TABLE 68 DOES NOT HAVE A MOTOR NERVE LISTED

Table 39. Impairments from Lower Extremity Muscle Weakness.

Muscle group		Whole-person (lower extremity) [foot] impairment (%)				
		Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Hip	Flexion	6 (15)	6 (15)	6 (15)	4 (10)	2 (5)
	Extension	15 (37)	15 (37)	15 (37)	15 (37)	7 (17)
	Abduction*	25 (62)	25 (62)	25 (62)	15 (27)	10 (25)
Knee	Flexion	10 (25)	10 (25)	10 (25)	7 (17)	5 (12)
	Extension	10 (25)	10 (25)	10 (25)	7 (17)	5 (12)
Ankle	Flexion (plantar flexion)	15 (37) [53]	15 (37) [53]	15 (37) [53]	10 (25) (35)	7 (17) [24]
	Extension (dorsiflexion)	10 (25) [35]	10 (25) [35]	10 (25) [35]	10 (25) [35]	5 (12) [17]
	Inversion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]
	Eversion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]
Great toe	Extension	3 (7) [10]	3 (7) [10]	3 (7) [10]	3 (7) [10]	1 (2) [3]
	Flexion	5 (12) [17]	5 (12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]

*Hip adduction weakness is evaluated as an obturator nerve impairment (Table 68, p. 89).

Peripheral Nerve Injuries

- **Chapter 4 Method** for Determination of Partial Loss
- In this case the partial sensory nerve loss is applicable.
- May use this when there is a motor nerve listed in Table 68, but it is an incomplete lesion.
- **Because Table 68 does not list a value for the motor component of this nerve, cannot apply the same Chapter 4 method for this nerve.**

Peripheral Nerve Injuries

Chapter 4 Method (in general)

- Determine appropriate peripheral nerve involved
- Take WP value from Chapter 3, Table 68, page 89 for complete motor or sensory loss
- Multiply value for complete motor loss (Table 68), IF there is one, by the grade of the partial loss for motor deficit
 - Chapter 4, Table 21, page 151
- Multiply value for complete sensory loss (Table 68) , IF there is one, by the grade of the partial loss for sensory deficit
 - Chapter 4, Table 20, page 151
- COMBINE partial motor % WP with partial sensory % WP if there are both

Peripheral Nerve Injuries

Chapter 4 Method (cont'd) - THIS CASE

- Determine appropriate peripheral nerve involved
 - superficial peroneal nerve
- Take WP value from **Chapter 3, Table 68, page 89** for **complete** motor or sensory loss
 - motor 0% WP (Due to error in TABLE 68)
 - sensory 2% WP

Impairments from Nerve Deficits

Table 68, Page 89

Table 68. Impairments from Nerve Deficits.

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

Peripheral Nerve Injuries

Chapter 4 Method (cont'd)

- **Multiply value for complete sensory loss** (*Table 68*) by grade of partial loss for sensory deficit
 - Chapter 4, Table 20, page 151
 - $2\% \text{ WP} \times 25\% = 1\% \text{ WP}$
- **Multiply value for complete motor loss** (*Table 68*) by grade of partial loss for motor deficit
 - Chapter 4, Table 21, page 151
 - $0\% \text{ WP} \times 25\% = 0\%$ (due to error in Table 68)
- **Combine partial sensory WP% with partial motor WP%**
 - Combined Values Chart, page 322
 - $1\% \text{ WP} \text{ cw } 0\% \text{ WP} = 1\% \text{ WP}$

Chapter 4, Tables 20 and 21 - Page 151

Table 20. Classification and Procedure for Determining Impairment Due to Pain or Sensory Deficit Resulting from Peripheral Nerve Disorders.

a. Classification		
Class	Description of sensory loss or pain	% Sensory impairment
1	No loss of sensation, abnormal sensation, or pain	0
2	Normal sensation except for pain, or decreased sensation with or without pain, forgotten during activity	1 - 25
3	Decreased sensation with or without pain, interfering with activity	26 - 60
4	Decreased sensation with or without pain or minor causalgia that may prevent activity	61 - 80
5	Decreased sensation with severe pain or major causalgia that prevents activity	81 - 95

- b. Procedure**
1. Identify the area of involvement, using the dermatome charts in Chapter 3 (pp. 50 and 52).
 2. Identify the nerve, part of plexus, or root that innervates the area.
 3. Find the value for maximum loss of function of the specific nerve or root due to pain or loss of sensation, using the appropriate table in the *Guides* chapter on the musculoskeletal system (Chapter 3, p. 13).
Use Table 13 (p. 51) for the cervical roots; Table 14 (p. 52) for the brachial plexus; Table 15 (p. 54) for upper extremity nerves; Table 83 (p. 130) for the lumbosacral roots; and Table 68 (p. 89) for the lower extremity nerves.
 4. Grade the degree of decreased sensation or pain according to the classification given above.
 5. Multiply the percentage associated with the nerve identified in procedure 3 (above) by the percentage associated with the decreased sensation.
 6. Determine other nerve impairments by the same procedure; *combine* the impairments using the Combined Values Chart (p. 322) to determine the whole-person impairment of the nervous system.

Table 21. Classification and Procedure for Determining Nervous System Impairment Due to Loss of Muscle Power and Motor Function Resulting from Peripheral Nerve Disorders.

a. Classification		
Grade	Description of muscle function	% Motor deficit
5	Active movement against gravity with full resistance	0
4	Active movement against gravity with some resistance	1 - 25
3	Active movement against gravity only, without resistance	26 - 50
2	Active movement with gravity eliminated	51 - 75
1	Slight contraction and no movement	76 - 99
0	No contraction	100

- b. Procedure**
1. Identify the motion involved, such as flexion or extension.
 2. Identify the muscle(s) performing the motion and the motor nerve(s) involved.
 3. Grade the severity of motor deficit of the individual muscles according to the classification given above.
 4. Find the maximum impairment due to the motor deficit for each nerve structure involved, as listed in Chapter 3: upper extremity (Table 15, p. 54), brachial plexus (Table 14, p. 52), lower extremity nerves (Table 68, p. 89); and lumbosacral nerves (Table 83, p. 130).
 5. Multiply the severity of the motor deficit by the percentage associated with the nerve(s) identified in procedure 4 (above) to obtain the estimated impairment from strength deficit for each structure involved.

Peripheral Nerve Injuries

Chapter 4 Method (cont'd)

- What is "missing" from CHAPTER 4 METHOD
- For Table 68, dysesthesia is either present or NOT. There is no partial.
- However, if Chapter 4 is used for sensory loss, then, dysesthesia will be accounted for in the higher categories in Table 11 (Class 3, 4 and 5).

MMI/IR - Lower Extremity Case 2

Peripheral Nerve Injuries Methods:

- **Chapter 3** (Section 3.2d)
 - Partial motor = 2% WP
 - No rating for partial sensory
 - **Chapter 4** (Section 4.4c)
 - Partial sensory = 1% WP
 - No rating partial motor / dysesthesia
- 2% WP or 1% WP (or 3% WP)?

Explain how and why you used the methods you did



What is Total Lower Extremity IR?

- Knee / Ankle / Hindfoot
ROM = 0 %
- DBE = 0 %
- Peripheral nerve = 2% WP
- Peripheral nerve combined with
MSK % WP (if we chose the
greatest)
- 2% WP c/w 0% WP = 2% WP
(or 3%)





Questions about MMI/IR LE Case 2?



**Let's take a short break
before we start Case 3**

MM/IR - Lower Extremity Case 3

History of Injury

- 58 year old librarian
- Was on the 3rd step of a step stool placing books on a shelf
- Lost her footing coming off the top step, fell, and planted her foot causing a valgus twisting load to the right knee
- Went to the ER where X-rays were negative for fracture but positive for a large suprapatellar effusion
- Established care with treating doctor the next week when the unusual swelling did not resolve

MMI/IR – Lower Extremity Case 3

Treating Doctor evaluation 1 week post injury

- Complains of “8/10” “constant” pain and swelling
- Clinical Exam Right Knee
 - Mildly antalgic gait
 - ROM extension - 4 ° and flexion 115° due to large suprapatellar effusion
 - Pain at the medial femur at MCL.
 - Mild joint line opening with valgus stress
 - Trace laxity with anterior drawer, (-) posterior drawer.
 - Joint line pain medially > laterally



MMI/IR – Lower Extremity Case 3

Treating Doctor evaluation 1 week post injury, cont.

- Referred to PT
- Completed 10 sessions of PT six weeks post injury

MMI/IR – Lower Extremity Case 3

- **Treating doctor re-evaluation 7 weeks post injury**
 - Exam findings unchanged from initial visit
 - Reported swelling had gone down some, but pain was not improved with PT
 - Knee feels unstable and has mechanical symptoms
 - TD referred IE to orthopedist
- **IE evaluated by orthopedist 10 weeks post injury**
 - IE complained of constant pain in her right knee
 - Reported that her right knee hurts worse at the end of the day and her knee would buckle when fatigued
 - Taking ibuprofen for pain, using Voltaren gel

MMI/IR – Lower Extremity Case 3

- Orthopedic exam findings
 - Non-painful crepitation of the patella
 - Range of motion 0 to 100 degrees, limited by pain but also by persistent effusion
 - Muscle strength 5/5 in the affected LE, but 4/5 in the affected quadriceps
 - “Positive McMurray’s” [No other specific information]
 - 1- 2 laxity with good endpoint with valgus stress compared to contralateral extremity. Complains of pain at the distal medial femur.

MMI/IR – Lower Extremity Case 3

Orthopedic findings (continued)

- Radiographs taken at orthopedic office showed tricompartmental arthritis with severe narrowing of the medial compartment and a large effusion
- Cortisone injection performed by orthopedist
- Referred by orthopedist for an MRI of the knee to *“define the pathology”*
- MRI performed 14 weeks post injury

MMI/IR – Lower Extremity Case 3

- **MRI imaging at 14 weeks post-injury demonstrated:**
 - Tricompartamental OA; medial > patellofemoral / > lateral.
 - Severe chondral thinning with associated osteophytes of the medial compartment
 - Moderate chondromalacia of the patellofemoral compartment
 - Mild chondromalacia lateral compartment
 - Large complex tear of the posterior horn of medial meniscus with extrusion and horizontal signal changes in the posterior lateral meniscus
 - Large suprapatellar effusion

MMI/IR – Lower Extremity Case 3

- MRI imaging at 14 weeks demonstrated:
 - Large areas of bone contusion at the posterolateral corner and medial femoral condyle near MCL attachment
 - Incomplete bundles of the anterior cruciate ligament (ACL) observed, with increased T2 signal changes within the ACL, consistent with acute / subacute tear
 - Acute / subacute intrasubstance signal changes in the MCL with questionable partial avulsion of proximal fibers at the medial femoral condyle

MMI/IR – Lower Extremity Case 3

IE returns to orthopedist 16 weeks post injury

- Exam findings and subjective complaints unchanged from previous visit; having more give-away episodes
- Reported that injection provided relief for about 3 – 7 days, but large effusion continues
- Working without restrictions
- Diagnoses by orthopedist
 - Medial meniscus tear
 - ACL tear
 - Osteoarthritis

MMI/IR – Lower Extremity Case 3

- Due to no change with therapy or injection and continued pain, the orthopedist recommended knee replacement
- IE underwent total right knee arthroplasty 22 weeks post injury
- Completed post surgical PT consistent with ODG 40 weeks post injury (18 weeks of therapy)
- Ortho exam at 50 weeks demonstrated extension lag of 20 degrees and contracture of -10 degrees.
- There was 2 cm calf atrophy.

MMI/IR – Lower Extremity Case 3

DD exam performed 60 weeks post injury (32 weeks / 8 months after surgery)

- DD exam findings:
 - IE ambulates with cane out of preference, because she feels “uneasy” on her “new knee”
 - Has occasional moderate pain while walking longer than 10 minutes at a time
 - Knee pain rated 6/10, eased with use of ibuprofen
 - Reports difficulty kneeling and squatting to pick up objects from floor

MMI/IR – Lower Extremity Case 3

DD exam findings at 60 weeks (continued)

- Healed surgical scar consistent with TKA
- No signs of infection
- ROM extension -10° , flexion 100
- Flexion contracture 5° and extension lag $< 10^{\circ}$
- Alignment 7°
- A-P instability 8 mm, M-L instability 7°
- Comparison to contralateral LE -
 - 1 cm calf atrophy of at 12 cm
 - 1.5 cm atrophy of right thigh at 10 cm

MMI/IR – Lower Extremity Case 3

Based on the medical records and physical examination of injured employee, what is compensable injury for certifying MMI and IR?

130.1(c)(3)



Case 3 - Lower Extremity MMI/IR

What is compensable injury for certifying MMI and IR?

- A. Knee strain
 - B. ACL tear
 - C. MCL tear
 - D. Degenerative OA of the knee
 - E. Complex tear of medial meniscus
 - F. B, C, D*
 - G. A, B, C, D* and E*
 - F. None of above.
- * = Aggravation



MMI/IR – Lower Extremity Case 3

What is compensable injury for certifying MMI and IR?

- A. This is non-specific diagnosis and there are more notable objective changes
- B. There was evidence of acute injury or SPRAIN / tear to the ACL
- C. There was evidence of acute injury or SPRAIN / tear to the MCL.
- D. In light of the objective evidence of injury to the knee joint complex, there was a probability of AGGRAVATION of the underlying degenerative condition of OA.
- E. The complex tear is degenerative. It is hard to aggravate a degenerative meniscus without specific anatomic changes adjacent to the complex tear.
- F. B, C, D* = BEST ANSWER
- G. A, B, C, D* and E*. * = Aggravation

MMI/IR – Lower Extremity Case 3

Question for DD to consider in the exam:

Has the IE reached MMI and if so when?



MMI/IR – Lower Extremity Case 3

Has MMI been reached?
If so, on what date?

- A. Yes, when completed 10 sessions of PT six weeks post injury.
- B. Yes, 16 weeks post injury at orthopedic follow up
- C. Yes, 40 weeks post injury, completion of post-op PT
- D. Yes, Ortho exam at 50 weeks
- E. Yes, 60 weeks, date of DD exam
- F. No, not at MMI



MMI/IR – Lower Extremity Case 3

- **A.** If there was aggravation of the pre-existing OA, AND there was evidence of other acute injury, then this date is premature. There are other ODG related treatments that would be recommended.
- **B.** If the OA had not been aggravated, this could have been a potential MMI date.
- **C.** This would seem to be a good inflection point. However, formal treatment is not always necessary to continue to improve

MMI/IR – Lower Extremity Case 3

- **D.** IF it has been explained that the OA was aggravated and there were other acute injuries, Appendix D would support the TKA
- If the TKA was appropriate, then what would the ODG say?
- **E. THIS IS the correct answer.** 60 weeks is just less than one year from the DOI.
- The IE is older and return to normal activities would be anticipated to result in further material recovery and DID result in further OBJECTIVE recovery.
- This was 20 weeks (5 months) after completion of PT.

MMI/IR – Lower Extremity Case 3

On the date of MMI, what is whole person IR?

- A. 0%
- B. 2%
- C. 4%
- D. 30%



Table 66. Rating Knee Replacement Results:*

	No. of points
a. Pain	
None	50
Mild or occasional	45
Stairs only	40
Walking and stairs	30
Moderate	
Occasional	20
Continual	10
Severe	0
b. Range of motion	
Add 1 point per 5°	25
c. Stability (maximum movement in any position)	
Anteroposterior	
<5 mm	10
5-9 mm	5
>9 mm	0
Mediolateral	
5°	15
6°-9°	10
10°-14°	5
≥15°	0
Subtotal	
d. Deductions (minus)	
Flexion contracture	
5°-9°	2
10°-15°	5
16°-20°	10
>20°	20
e. Extension lag	
<10°	5
10°-20°	10
>20°	15
f. Alignment	
0°-4°	0
5°-10°	3 points per degree
11°-15°	3 points per degree
>15°	20
Deductions subtotal	—

*The point total for estimating knee replacement results is the sum of the points in categories a, b, and c minus the sum of the points in categories d, e, and f. Modified from ref. 44.

Rating Knee Replacement

Table 66, Page 88

Results for a-f

- a. Moderate occasional pain 6/10 with walking
- b. ROM flexion 100°
- c. Stability A-P 8mm
- d. Flexion contracture 5° degrees
- e. Extension lag < 10°
- f. Alignment 7°

Table 66. Rating Knee Replacement Results*

	No. of points
a. Pain	
None	50
Mild or occasional	45
Stairs only	40
Walking and stairs	30
Moderate	
Occasional	20
Continual	10
Severe	0
b. Range of motion	
Add 1 point per 5°	25
c. Stability (maximum movement in any position)	
Anteroposterior	
<5 mm	10
5-9 mm	5
>9 mm	0
Mediolateral	
5°	15
6°-9°	10
10°-14°	5
≥15°	0
Subtotal	
d. Deductions (minus)	
Flexion contracture	
5°-9°	2
10°-15°	5
16°-20°	10
>20°	20
e. Extension lag	
<10°	5
10°-20°	10
>20°	15
f. Alignment	
0°-4°	0
5°-10°	3 points per degree
11°-15°	3 points per degree
>15°	20
Deductions subtotal	—

*The point total for estimating knee replacement results is the sum of the points in categories a, b, and c minus the sum of the points in categories d, e, and f. Modified from ref. 44.

Rating Knee Replacement

Table 66, Page 88

SUMMARY

$$(a + b + c) - (d + e + f)$$

- $(20+20+15) = 55$
- $(2+5+9) = 16$
- $55 - 16 = 39$ points
- Next, don't forget to refer to Table 64, page 85
- Less than 50 points is a POOR result = 30% WP



Rating Knee Replacement Best Practice - Alignment

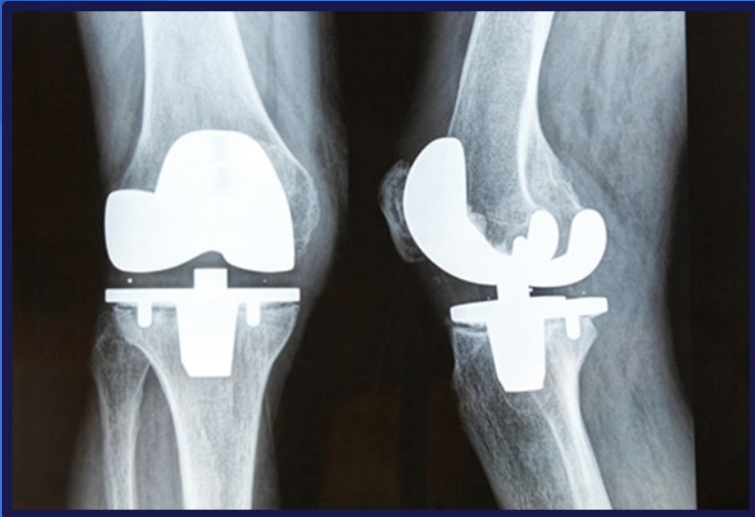
- $0^{\circ} - 4^{\circ} = 0$ points
- $5^{\circ} - 15^{\circ} = 3$ points per degree
- $>15^{\circ} =$ add 20 points
- **SEE TABLE next slide**

Rating Knee Replacement Best Practice - Alignment

5° = 3 points
6° = 6 points
7° = 9 points
8° = 12 points
9° = 15 points
10° = 18 points

11° = 21 points
12° = 24 points
13° = 27 points
14° = 30 points
15° = 33 points
>15° = 53 points*

Questions?



MM/IR - Lower Extremity Case 3

An Alternate Scenario

History of Injury

- 58 year old librarian
- Was on a 3 rung step stool placing books on a shelf
- Missed the last step coming off the step stool, fell, and landed on the front of her knee
- Went to the ER, x-rays were negative for fracture but presence of tricompartmental OA
- Established care with treating doctor the next week with complaint of pain, swelling, and stiffness of the knee.

MM/IR - Lower Extremity Case 3

Alternate Scenario

Physical exam 1 week post injury

- Knee
 - “8/10” “constant” pain
 - mildly antalgic gait
 - ROM extension 0° and flexion 125°
 - no laxity with anterior drawer, posterior drawer
 - no laxity with medial or lateral stress testing
 - “Positive McMurray’s”
 - visible bruising at the patella
- Referred to PT
- Completed 10 sessions of PT six weeks post injury

MM/IR - Lower Extremity Case 3

Alternate Scenario

Treating doctor re-evaluation 7 weeks post injury

- Pain complaints unchanged
- Exam findings unchanged from initial visit
- Range of motion 0 to 125 degrees
- No laxity or MCL pain on medial stress testing

TD referred IE to orthopedist

- IE evaluated by orthopedist 10 weeks post injury
- IE complained of constant pain in her right knee
- Reported that her knee hurts worse at the end of the day
- Taking ibuprofen for pain, using Voltaren gel

MM/IR - Lower Extremity Case 3

Alternate Scenario

Orthopedic exam findings 10 weeks post injury

- Tenderness with palpation of the patella
- Range of motion 0 to 100 degrees “limited by pain”
- Retropatellar crepitus noted with active and passive motion
- Muscle strength 5/5
- “Positive McMurray’s” [No specific remarks as to location or palpable meniscus movement]
- Negative Lachman’s
- No laxity or pain with lateral stress testing. Mild bilateral opening at 30 degrees with valgus

MM/IR - Lower Extremity Case 3

Alternate Scenario

Orthopedic findings (continued)

- Radiographs taken at the orthopedic office show tricompartmental arthritis with severe narrowing at the medial compartment
- Cortisone injection performed by orthopedist
- Referred by orthopedist for MRI to “rule out meniscus tear or other pathology.”
- MRI performed 14 weeks post injury

MM/IR - Lower Extremity Case 3

Alternate Scenario

- **MRI impression:**
 - Tricompartmental OA; medial > patellofemoral / > lateral.
 - Severe chondral thinning with associated osteophytes of the medial compartment
 - Moderate severe chondromalacia patellofemoral compartment
 - Mild chondromalacia lateral compartment
 - Large complex tear of posterior horn of medial meniscus with extrusion and horizontal signal changes in the posterior lateral meniscus

MM/IR - Lower Extremity Case 3

Alternate Scenario

MRI impression:

- Subchondral cystic changes, but no other bone contusions / edema
- Incomplete visualization of the anterior cruciate ligament with areas of thickening / scarring
- Remaining ligaments, including MCL intact without acute / subacute changes
- Trace soft tissue swelling anterior to the patella, BUT no bone contusion of the patella or femoral trochlea
- Mild knee effusion

MM/IR - Lower Extremity Case 3

Alternate Scenario

IE returns to orthopedist 16 weeks post injury

- Exam findings and subjective complaints unchanged from previous visit
- Reported that injection provided relief for about 3 days
- Working without restrictions
- Diagnoses by orthopedist
 - Medial meniscus tear
 - ACL tear
 - Osteoarthritis

MM/IR - Lower Extremity Case 3

Alternate Scenario

- Due to no change with therapy or injection and continued pain orthopedist recommended knee replacement
- Initial request for surgery denied by carrier
- Second request for surgery approved 34 weeks post injury
- IE underwent total right knee arthroplasty 36 weeks post injury
- Referred for post surgical PT
- PT delayed by COVID19 infection causing respiratory compromise
- Post surgical therapy started 46 weeks post injury

MM/IR - Lower Extremity Case 3

Alternate Scenario

DD exam performed 50 weeks post injury

- DD exam findings
 - IE ambulates with cane
 - Healed surgical scar at right knee
 - No swelling or signs of infection
 - Knee pain 6/10

MM/IR - Lower Extremity Case 3

Alternate Scenario

- **DD exam findings continued**
 - ROM extension -10° , flexion 100°
 - Flexion contracture 5° (confirmed with passive ROM) and extension lag $<10^{\circ}$
 - Alignment 7°
 - A-P instability 8 mm, M-L instability 7°
 - No atrophy of calf or thigh
- Has completed 10 sessions of PT and reports that PT is helping
- Has not returned to work

MM/IR - Lower Extremity Case 3 Alternate Scenario

Based on the medical records and physical examination of injured employee, what is compensable injury for certifying MMI and IR?

130.1(c)(3)



MM/IR - Lower Extremity Case 3

Alternate Scenario

What is compensable injury for certifying MMI and IR?

- A. Knee Contusion
- B. ACL tear
- C. Osteoarthritis of the knee
- D. Complex tear of the medial meniscus
- E. All of the above



MM/IR - Lower Extremity Case 3 Alternate Scenario

**Question for DD to
consider in the exam:**

**Has the IE reached MMI
and if so when?**



MM/IR - Lower Extremity Case 3

Alternate Scenario

Has MMI been reached?
If so, on what date?

- A. Yes, follow up with treating doctor 7 weeks post injury
- B. Yes, 16 weeks post injury at orthopedic follow up after cortisone injection
- C. Yes, 50 weeks, date of DD exam
- D. No, not at MMI



MMI/IR – Lower Extremity Case 3

On the date of MMI, what is whole person IR?

- A. 2%
- B. 12%
- C. 30%



MMI/IR – Lower Extremity Case 3

Initial and Alternate Scenario

Any questions as to how these scenarios are presented

- Compensable Injury?
- MMI?
- IR?



MM/IR - Lower Extremity Case 3

Alternate Scenario

Compensable Injury?
Knee contusion

- MOI = direct trauma
- No clinical findings to support an aggravation.
- MRI showed no acute findings: The complex tear and extrusion are consistent with longstanding anatomic changes.

Treating / consulting doctor recommendations...
Treatment that is pre-authorized or performed...
DOES NOT EQUAL COMPENSABILITY.

MM/IR - Lower Extremity Case 3

Alternate Scenario

Has MMI been reached?

- A. YES - at follow up with treating doctor 7 weeks post injury
- This is consistent with the mechanism and diagnosis of knee contusion that has physiological healing time of 6-8 weeks
- B. Not correct - cortisone not indicated for soft tissue contusion without bone contusion or aggravation of the OA.
- C. and D. Not correct - joint replacement not related to the compensable injury

MM/IR - Lower Extremity Case 3

Alternate Scenario

Impairment Rating?

- A is the correct answer. The IE had PT for the contusion. Subsequent pain not related to the contusion. There was a direct trauma to the anterior knee. As per the Footnote on Table 62, there are findings of chondromalacia.
- B. Rates ROM from DD exam of -10 extension = 8% and flexion = 4%. Recall that ROM before the TKA was 0-125.
- C. Joint replacement is not compensable in this case

Questions?



Don't forget!

- Please submit your evaluation for Lower Extremity MMI/IR presentation.
 - <https://www.tdi.texas.gov/wc/dd/training.html>
- Please submit your attestation form for the pre-recorded presentations.
 - <https://www.tdi.texas.gov/wc/dd/documents/ddatestation.pdf>

Thank you